

DE MONTFORT UNIVERSITY
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INFORMATION SCIENCES

**A Study of the Implications of Information
Superhighway Technology on Hertfordshire based
Small-Medium Electronic Enterprises.**

An
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Abstract

ABSTRACT

This research is concerned with the utilisation of ICT/the Internet by smaller businesses. The advent of new ICT/Internet technology is potentially particularly beneficial to resource-constrained small-medium size enterprises (SMEs). However, whilst understanding of the distinctiveness of smaller firms vis-à-vis large companies is unfolding apace within academia, there is as yet less than universal agreement as to the nature and form of the distinctive organisational, managerial and development features of smaller businesses.

A major premise of this research is that, if the nature and form of small business development and the idiosyncrasies and informalities of small firm management processes are little understood, then prediction and prescription as to the manner in which newly emerging ICT applications, including the Internet, will impact small business in enabling and/or constraining sense will remain problematic. This research thus focuses on enhancing understanding of small business organisation and strategic development processes and ICT application in that context. In order to address the full context of the research problem with regard to existing nascent understanding of small business development and the inchoate nature of ICT/the Internet, a form of epistemological bootstrapping process is utilised to facilitate a structured approach to qualitative, holistic investigation of the small business development context and the utilisation of ICT within that context. The research approach attempts to address the problem of case study research offering little more than common sense storytelling.

The results of the study reveal that the participant SME owner managers and managers do have a high level awareness of much of the potential of Internet technology. But Internet business application remains predominantly limited to use as a cheaper alternative to conventional communicating and advertising media and operational level applications. The owner management is still apprehensive about conducting financial transactions on the Internet and whilst some of the participant firms have adopted novel utilisation of the Internet as a media for gathering data from remote customer sites and other strategic oriented uses, most of the firms remain in a state of some confusion about depth of usefulness of the technology in the fuller strategic context of their business activities. Perhaps not surprisingly, mindset tends to be oriented towards technical aspects of their high technology organisations rather than within a wider strategic business context. The study does identify areas of innovative use of the Internet for business development purposes, though it appears that small businesses have a significant way to go with regard to anchoring-in fully the potential of the Internet in underpinning and facilitating strategic development. In this latter respect, the findings of the study begin to unfold support for those areas of the strategic management literature that focus on learning and organisational learning as modes of strategic control and strategic development process.

A key conclusion of the research relates to the apparent potential to enhance small business organisational learning-based strategic management approaches in their attempts to cope with an increasingly uncertain external environment. Integral to this is the potential to nurture deeper owner manager understanding of effective strategic learning processes, actions and practices and the associated potential applications of ICT and the Internet in facilitating this. This study has begun to make explicit the roles of day-to-day management learning actions and practices such as dialogical interfaces with key knowledge holders like suppliers and

customers and of 'try out' and experiment in determining appropriate changes to strategic markets, products and/or processes activities. Effectively, it is suggested that ongoing contextual, processual research will unfold deepening understanding of the strategic development and management activities and practices of successful SMEs and in turn provide context for making explicit the ways in which ICT/the Internet can aid these processes and actions. This potentially points to the real strategic level role of ICT/the Internet for progressive growth-oriented smaller businesses resting more with better facilitating 'natural' day-to-day management activities that have strategic significance, with emphasis on facilitation of the informal, than on attempting to support some higher placed formal strategic management process. Currently, levels of understanding of small business strategic development and management practices are such as to constrain identification of the full potential of ICT/the Internet.

Chapter One

Introduction

CHAPTER ONE

INTRODUCTION

1.0 Background of the Research:

During the past two decades the World has seen the unprecedented growth of information technology. With the growth of computing power and improvements in telecommunication technology came the possibility of electronic data communication technology. One such concept is the Information Super Highway (ISH), popularly known as Internet technology. This technology only came into public and commercial use 4 years ago. The concept is so new that, despite its rapid growth within this short period, its potential is yet to be fully realised. It is though envisaged that its impact will be enormous on the commercial, social, economic and industrial sectors. This exponential growth is providing new sources of opportunities and threat to organisations of all sizes encompassing every industrial sector.

The nature and form of development of small-medium size enterprises (SMEs) has until recent years, however, been an overlooked phenomenon despite its role as the major provider of employment, and its role in economic re-generation and growth (Storey, 1995). The implications for smaller businesses of emerging ICT applications are thus little understood and is likely to so remain for some considerable time. It is on the implications of ICT for SMEs, and of the Internet in particular, that this study focuses.

1.1.0 *The Macroeconomic Environment for SMEs in the UK:*

1.1.1 *World Economic Scenario:*

During the past two decades the World economy has gone through two consecutive recessional periods. Since then the global economy has been having a bumpy ride due

to various unpredictable geo-political and social events such as end of the cold war and the events of September 11.

In the context of the global economic climate the Bank of England contemplates that overall global economic growth will remain fragile as indicated by both the European Central Bank and the US Federal Reserve's ongoing lowering of interest rates to prop up faltering consumer demand (Finance of Small Firms-A Tenth Report, Bank of England, April, 2003).

1.1.2 *Overview of UK's Economy:*

The UK, a leading trading power and financial centre, is one of the quartets of trillion dollar economies of Western Europe. Over the past two decades the government has greatly reduced public ownership and contained the growth of social welfare programs. Agriculture is intensive, highly mechanized, and efficient by European standards, producing about 60% of food needs with only 1% of the labour force. The UK has large coal, natural gas, and oil reserves; primary energy production accounts for 10% of GDP, one of the highest shares of any industrial nation. Services, particularly banking, insurance, and business services, account by far for the largest proportion of GDP while industry continues to decline in importance. GDP growth slipped in 2001-02 as the global downturn, the high value of the pound, and the bursting of the "new economy" bubble hurt manufacturing and exports. However, the economy is still one of the strongest in Europe: inflation, interest rates, and unemployment remain low. The relatively good recent economic performance has complicated the Blair government's efforts to make a case for Britain to join the European Economic and Monetary Union (EMU). The Prime Minister has pledged to hold a public referendum if membership meets Chancellor of the Exchequer Brown's five economic "tests." Scheduled for assessment by mid-2003, the tests will determine whether joining the EMU would have a positive effect on British investment, employment, and growth. Critics point out, however, that the economy is thriving outside of the EMU, and they point to public opinion polls that continue to show a majority of Britons opposed to the single currency. Meantime, the government has been speeding up the improvement of education, transport, and health services, at a cost in higher taxes.

According to the 2002 estimates the GDP of the UK was \$1.52 trillion and per capita GDP was \$25,300. GDP is broken down as agriculture: 1%, industry: 25% and service sector: 74% while economic growth rate in real terms was 1.6%.

Although according to the 2002 estimate the rate of inflation (increase in consumer prices) is 2.1%, the UK's economic growth slowed down in 1999 to a rate of 2.7% in the first quarter of the year 2001.

The weakness of UK economic growth in 2001 continued well into the early-2002, however, growth then recovered in the second and third quarters and showed signs of stabilisation towards the end of that year. In whole calendar year of 2002 the growth rate showed signs of slowing down to 1.8% from 2.1% in 2001. Recent business surveys suggest a further slowing down of economic performance due to geopolitical uncertainty, weaker overseas growth rates, and the dipping down of equity prices that are expected to weigh heavily on commercial and business prospects.

Overall growth in 2002 continued to be supported by domestic demand; boosted up by private sector consumption and government expenditure. Low interest rates and high levels of confidence, associated with continued increases in house prices, underpinned households' consumption which, increased by 3.9% in 2002. Current government expenditure grew by 3.8% during the same period. On the other hand, fixed investment declined and business investment was 0.8% lower vis-à-vis 2001.

The above global and national economic scenarios are indicative of a general apprehensive mood of the business community with regard to the economic and political climate resulting in lower exports despite a stronger trade balance and the weakening of Sterling against the Euro (CIS- The World Fact Book 2002 – United Kingdom_files).

1.1.3 *The importance of SMEs in the UK's economy:*

Against the above global and national economic backdrop, the sectoral imbalances in the UK economy continued. Activities in the service sector are on the increase, having expanded by 2.7% in 2002, thus offsetting to some extent the 4% decline in

manufacturing output. This sectoral imbalance also reflected on the UK SME sector. The aftermath of the September 11 and the foot-and-mouth-disease outbreak took their toll on the UK hotel and tourism industries where there is a significant presence of SMEs.

In recent years there has been a growing realisation among, and acceptance by, governments in developed countries of the importance of SMEs as significant contributors to the national economy and as major players as regional economic revivers and wealth generators through job creation activities. This recognition is reflected in the UK through increasing numbers of public sponsored support programmes launched by the Blair government for the SME sector over the past few years. The extent to which such programmes are facilitating small firm development is questionable.

Moreover, recent UK government deregulation policy, along with EU marketing directives, culminated in creating a free market economy that in turn exposes indigenous UK SMEs to a precipitous competitive environment. Including encountering a situation where firms from countries all over the world are vying for a slice of the market. Within such a dynamic economic climate, where the locus of the industry is gradually shifting from manufacturing to service sectors, some pressure is naturally imposed upon small industrial manufacturers.

In the context of UK's commercial milieu, SMEs account for a significant proportion of the business stock. In fact, out of 3.7 million registered businesses in the UK 99.8% are small to medium sized employing 55.4% of the workforce with a total national turnover of 51.4% (SBS SME statistics, 2001).

The importance of the SME sector in the UK can further be comprehended by its contribution to the national economy in terms of GVA (Gross Value Added) and Net Capital Expenditure (NCX) indicators. For example, the manufacturing and service sector SMEs contributed 54.0% and 39.5% respectively to the UK's GVA and NCX. In relation to the whole of UK economy, the SME sector contributed 38.8% to GVA in 2001 (Finance of Small Firms-A Tenth Report, Bank of England, April, 2003).

Potentially, micro-, small and medium size businesses are ‘engines’ of growth, an integral part of the economic infrastructure and/or an embedded element of the social fabric of local communities. For example, fast growth SMEs can ‘engine’ or ‘motor’ key expenditure and activity components of the economy: successful growing businesses will invest in new capital equipment and factories thereby providing investment impetus to localities; many of these can expand by exploiting overseas market opportunities through active exporting and extend domestic market activity – possibly by pushing back the competitive inputs of importers. Integral to such expansionary SME activity is provision of local employment opportunities and the associated fuelling of increased local consumer expenditure. At a more mundane life style, but no less important level, micro and small businesses can be found providing the ‘social glue’ of localities – positioned for example as the focal point of social gatherings (such as the village shops, post office or public house) and provider of casual employment opportunities.

In actuality, however, full realisation of the potential input of micros, small and medium size enterprises to economic and social development on the UK is dependant upon the management capabilities of the individual proprietors and owner managers. Enhanced understandings of the management development needs of such business and of the potential role of ICT/the Internet in better facilitating SME management processes and organisational development activities is a pre-condition for the effective nurturing of such organisations to their potential developmental inputs to the local and national economies and to thus reinforce the importance of SMEs in both economic and social development contexts.

1.1.4 The importance of SMEs in Hertfordshire’s economic development:

Against the global and national economic backdrop as explained above, Hertfordshire is performing well on the economic front.

For example, although 2% slower than the previous year Hertfordshire’s GVA rose by 4.9% in 2002. Well above the UK’s rate. In the context of sectoral breakdown, the services sector saw growth of 6%, while, manufacturing experienced a decline of 1% below the UK average.

According to the Hertfordshire Local Economy Assessment (2002), in the east of England after Essex, Hertfordshire has the largest stock of businesses, comprising 2.2% of nationally registered businesses. Of these businesses 99% are small to medium and micro while 78% of the Hertfordshire's workforce is employed by these businesses. The importance of the SME sector in the UK is highly apparent for economic growth and development in Hertfordshire.

A recent DTi survey (DTI publication, 2001) identifies the importance of the East of England region, which includes Hertfordshire, in terms of its industrial clusters. Four are of international significance in the high-tech arena. These are:

- ICT/electronics
- Pharmaceuticals/biotechnology
- R&D activity
- Software development.

Most of these firms fall within the SME or micro level brackets.

1.2 ICT/ISH technology and its impact on business communities:

In recent years, global development has begun to see the convergence of telecommunications, satellite broadcasting, digital and cable TVs and computer technologies with the advent of the concept of the Information Super Highway technology. As a result, the world community is being offered an opportunity of exchanging information globally at an extremely low cost and in a flexible and rapid manner. The fundamental concept behind this exchange of information which ICT has brought forth is the interlinking of various external data bases and localised networks in real time over telephone line or other communication medium. Although ISH technology in the true sense is a technology of the future, the first stage of this technological innovation is the Internet. Already available, Internet technology has enabled computers with disparate system protocols to communicate with each other

and to access various data bases and local networks situated at all corners of the globe and to exchange information at the cost of local telephone calls.

For business communities ICT offers 'opportunities' to locate new markets and resources in terms of new customers, raw materials, finance and R&D facilities on a global basis. At the same time it also becomes a source of 'threat' to them in that the global nature of the technology also poses a source for precipitous competition from home and overseas competitors.

In the UK around 90% of businesses are now connected to the net. For the past three years this figure has remained almost static indicating that many of those businesses wanting to access to the Internet have already got it and the real challenge that lies ahead of them is to unlock ICT/Internet's real value through its strategic business applications.

The recent DTI benchmarking study (International Benchmarking Study 2003, DTi) on ICT usage shows that although UK businesses are progressing with more sophisticated use of ICT on average the UK has a mid-level position within an eleven major industrial nation league-table on ICT usage. The study further reveals that, comparatively, the UK has the lowest percentage of micro and small businesses connected to the net.

In the year 2003 most UK businesses were deploying ICT/Internet in their business processes more than in the past. However, business applications of the ICT/Internet are mostly confined to larger businesses within the UK. For small businesses, the benchmarking study (ibid) portrays a somewhat different picture. Although by and large most UK businesses believe that ICT/Internet can help them to reduce overheads, very few see them as a potential tool for boosting revenues. In particular, micro to small businesses' main concern is running costs of web sites. There is a rising trend among UK small businesses to switch off from the net on financial grounds. The study reveals that this is caused by small firms' inability to see the potential long-term benefits of ICT/Internet due to resource constraints.

At the beginning, like other businesses, UK micro and small businesses made a '*dash for the dot*' to connect to the net. But external factors, such as, small business competitive environment, type of small business evolved markets (different from their larger cousins) and internal factors such as limited ICT/Internet use, high running costs for web sites, lack of proper technical staff, relevant technical knowledge and lack of business use, inhibit the small business ability to visualise ICT's potential as a business tool. The result is there is a rising trend among UK small businesses to '*click-off*' from the net (ibid).

A comparative analysis (ibid) about UK regional small business ICT/Internet usage shows that within the SME sector electronics, manufacturing and media sectors are forerunners in ICT/Internet use for business purposes. The analysis further revealed that, whilst the East of England (which includes Hertfordshire) small businesses significantly use the ICT/Internet for on-line ordering purposes, this SME sector is trailing behind its other regional counterparts in other strategic uses of the ICT/Internet.

1.3 Reason for selecting this area for investigation:

In the near future, growth or survival of a business organisation will be largely dependant on its manoeuvrability in gathering information, and ability to turn that information into relevant knowledge of market and resources in an efficient and cost effective fashion to creating sustainable competitive advantage.

Obviously, this concept of doing business on the basis of 'intangible' information and 'virtual' knowledge requires a business concept different from the 'classical' view of business, markets, competitors or competition. It opens a new 'frontier' to the business communities. Businesses therefore need to restructure and reorganise their overall business approaches and strategies in the face of this inexorable shift of business paradigm from the 'classical' to a 'virtual' concept. Because, this information and knowledge based business paradigm will impact on all aspects of organisational life including markets, customers, suppliers, distributors and internal factors, from human resources, R&D, marketing/sales to production processes and activities.

It is therefore crucial to study the inexorable change which is about to impact on the businesses which form the critical mass of the UK's commercial sector, the small business sector (employing 95% of the workforce and responsible for local and regional economic growth and prosperity). Not least because for small businesses the Internet for the first time not only offers opportunities to access new home and overseas markets and to explore resources globally on an equal footing with large resource-rich organisations, but also poses the threat of precipitous competition on a global stage.

1.4 *The Original Nature of the Research:*

The impact of ICT/Internet on SMEs' organizational activities has been a focus for investigation in recent years. Examination of small business development is also an embedded research activity in most higher education institutions. However, understanding of small business development and the nature and form of small business management activities remains in its infancy. Despite widening recognition that the smaller business is distinct in qualitative as well as quantitative terms from large companies, many of those offering management prescription to small firms as well as those involved in small business research, have drawn on paradigms and frames of reference more suited to large organisations. And/or have relied upon static 'point in time' investigation of the impact of ICT on smaller firms. The originality of this research includes:

(a) A research process that:

- Facilitates the making explicit of the distinctive managerial and developmental features and characteristics of smaller businesses
- Accommodates contextual, processual investigation of small business development and the impacts of ICT/the Internet thereon: and thus transcends 'static' consideration of what is a dynamic phenomenon

- Provides a creative foundation ‘bootstrapped’ insight that draws in synthesised informing inputs from the extant literature and the world of small business practice to foothold the approach to empirical case study investigation (thereby ensuring case study research transcends ‘common-sense storytelling’)

(b) A research output that:

- Reveals enhanced understanding of the SME development context and management and development processes
- Reinforces areas of extant understanding of the potential applications of ICT/the Internet in the small business development context
- Extends understanding of those factors, forces and issues that facilitate and constrain ICT/Internet uptake by smaller businesses in given development contexts
- Demonstrates the potential to understand small business strategic development in terms of management activities, processes and practices embedded within the day-to-day of the organisation (see the micro-strategy work of Johnson et. al., 2003) not merely as some ‘lofty’ or ‘aloof’ higher level strategic management form
- Offers descriptive small business development context and, within that context, analysed components of that development that begin to make explicit small business strategic development processes and activities and the ways that ICT/the Internet do or could contribute to and facilitate that development.

1.5 The Problem Context:

As explained above, the critical mass of business activity within most localities in the UK economy is in the form of small-medium size enterprises. As much as 95 per cent of localities consist of SMEs. Their contribution to economic development is not disputed: seen by governments as key employment providers; by individuals as a way of

expressing individuality and creativity; and by local communities as an integral part of the commercial and social infrastructures, the health of the smaller business is an agreed essential component of day-to-day life.

Where agreement is less than universal relates to the nature and form of small business organisation and development. There has in the past been a tendency among many academics and small business support providers to treat the smaller business as if it were a microcosm of a large company. However, over the past two decades a growing realisation among academic researchers has begun to communicate that a small business is not '*a little big business*' (Welsh and White 1981). Certainly there is now an increasing recognition and understanding of the idiosyncrasies of small business management processes and styles, and the unique problem-types they face (Wyer, 1998). Strategy building processes have been identified as complex and often emergent in nature (Fletcher and Harris, 2002). And, unlike large firms, a small firm's ability to cope with its highly uncertain environmental change situations appears to be, at least partly, dependent upon its ability to learn its way along (Wyer et. al., 2000; Sadler-Smith et. al., 2001). What is not yet clear is the extent to which existing large company oriented management insight, models and tools have utility and applicability in a small business development context. For example, the absence of a comprehensive mission statement in a small firm's strategic planning system (O'Goran and Doran, 1999) has been argued to be due to a lack of management's knowledge of existing strategic management which, it is suggested, in turn also limits the firm's ability to formulate and implement effective strategies (Woods and Joyce, 2003). Arguably, though, given the distinctiveness of small firm strategy development processes and learning activities, there could be a mismatch between strategic management concepts and tools, which are essentially developed with large companies in mind, and the management forms and needs of many small businesses.

It seems, therefore that whilst research is progressively revealing more and more about the distinctive features of smaller businesses, much of the unfolding insight draws attention to just how much further investigation still has to go before we have management knowledge bases, theories and concepts capable of effectively guiding small business management practice. One corollary of this has serious implications. It is often accepted that a small business may demonstrate clear quantitative differences

to large companies (less employees; fewer customers and suppliers; uses less raw materials and component parts), but many qualitative differences still tend to be ignored, assumed away or misunderstood. The distinctiveness of the small business in terms of distinctive managerial and organisational features receives little attention in the mainstream management literature (Wyer and Smallbone, 1999). The tendency in the approach to design, development and delivery of small business management support provision has thus been to utilise essentially large company-oriented management vehicles and frameworks, or to simply water these down.

At issue here is if the nature and form of small firm development and the idiosyncrasies and informalities of small firm management processes are little understood, then prediction and prescription as to the manner in which newly emerging ICT applications, including the internet, will impact small business in an enabling and/or constraining sense will remain problematic.

Indicative areas of management activity which remain crucial to sustained small business development but little understood in the small business context are marketing (Carson 1991) and strategic management (Wyer and Smallbone 1999). Arguably, in both of these management areas, ICT offers great potential input into small business sustained competitiveness. Integral to both marketing and strategic management activities is the ability to identify and cope with unfolding external change situations in terms of recognising and acting upon developmental threat or opportunity. A central proposition of this study, however, is that if understanding of the nature and form of such small business 'marketing' and 'strategic management' activity is at best skeletal, then the ability of those attempting to assist and advise small business in the effective uptake and anchoring-in of ICT will remain low level, and even counterproductive.

1.6 The Research Focus:

An overall embracing aim of this study is to examine the nature and form of external change impacting on small to medium size enterprises and the ways in which they adjust to unfolding change forces in order to effect sustainable strategic development.

A specific aim of the study is to enhance understanding of the effects of emerging technological innovation in the form of the information Super Highway (ISH) Technology and wider ICT applications within a context of overall unfolding change and strategic development of Hertfordshire based small to medium size electronic manufacturers. One of the prime aims of this investigation is to add to the extant knowledge-base with regard to the impact of emerging 'technological innovation' (Angehrn, 1997; Vadapalli and Ramamurti, 1998) known as the Information Super Highway (ISH) technology. Focus is on strategy development processes of Hertfordshire based small to medium electronic manufacturing firms and the retrospective study of the inexorable changes and developments unfolding at various organisational levels.

The practical application of the ISH technology is at present only conceptualised in the form of Internet technology which eventually falls within the wider ICT domain. This study therefore focuses on the Internet in this context.

It is generally agreed that modern technological innovations are becoming predominant factors in explaining the economic performance of present day organisations, and consequently the economic development and regeneration of a country or region (Lambooy, 1997). For Freeman (1982:109) it is '*not to innovate to die*'. This refers to the crucial for innovation and suggests a pivotal role for high tech firms in determining the economic policy of most developed industrialised countries. It can therefore be argued that those high technology firms could be an excellent starting point in understanding the strategic re-orientation of organisational activities under the influence of the emerging *ISH/ICT* technology. This specific business sector has been selected for two reasons: (a) the author's prior interface with and knowledge of such Hertfordshire based SMEs deriving from his MBA studies; and (b) that the technological nature of the selected firms suggests a likely existing orientation toward and ability with emerging ICT applications. In line with the systems approach (Kast and Rosenzweig, 1973) this research also posits small businesses as 'open systems', where '*in reality many of the things which cross the organisational boundary, new laws, people, changes in technology, competitor's price cuts, interest rates and so on are neither easily predicted or controlled....*' (Lawrence and Lee, 1993: 74) and, ICT/Internet can act as a bridge across this organisational boundary between the

external operating environment and small business internal functional departments or activities, considering them as sub-components of the small business system in its totality.

In order to address the full context of the research problem with regard to the nascent understanding of small business development discussed in the previous section, the underpinning research approach is designated into two key stages:

a) Formation of a conceptual research framework based on the premise of a form of ‘epistemological bootstrapping’ process as described by Archer (1988) and its practical application as utilised by Wyer (1990).

b) An empirical investigation.

(a) The conceptual research framework was built out of an ‘epistemological bootstrapping’ process (Archer 1988; Wyer 1990). This was undertaken in order that a foundation of understanding as to the idiosyncrasies and unique development characteristics of small business is built out of the extant small business literature and strategy development literature to foothold the research. This ‘bootstrapping’ involves a critical analysis of key areas of the literature and is worked into partial frames of guiding insight (‘bootstraps’) which are used to foot hold the research in terms of clarifying research objectives and revealing key research questions and issues for ultimate empirical investigation. In addition to foot holding insight from the small business literature, a guiding body of informing insight is also built up from consideration of relevant areas of ICT literature. Moreover, the bootstrapping process extends beyond the extant literature base to incorporate an informing base from the world of small business practice whereby initial insight from the world of practice is used as interpretative frames of reference to aid consideration of the literature insight.

(b) A ‘mainstream’ empirical investigation is then undertaken: the epistemological bootstrapping process provides the foot holding for an empirical investigation of the implications of ICT within the small business development context. Effectively, the ‘bootstrap’ (or partial frames) of informing insight makes explicit the research questions and issues for investigation and of the appropriate research approach to

underpin the investigation. Within this study the bootstrapping reveals the appropriateness of case study investigation and informs design of a case study interview instrument and appropriate analytical frames of approach.

Thus, the initial base understanding (literature and world of practice-derived) of small business idiosyncrasies and developmental issues provides the overall context for consideration of the concepts of the Information Super Highway and wider ICT applications in practice. Early focus within the case investigation is on examination of the various inputs which commentators portray as supportive business infrastructure and management vehicles, which the ISH technology can potentially provide. This is considered in the specific small business context and incorporates examination of how potential restrictions may reduce opportunity for small business utilisation of such technology.

1.7 Philosophical Foundations of the Research and the Issue of Quality of Research Process

Issues of quality of research process and outputs are predominantly addressed through triangulation. The concept of the epistemological bootstrapping process derives from Archer's (1988) critique of the shortfalls of philosophical research foundations based upon epistemological combinations of either positivism/external realism or normative/subjective idealism. His alternative philosophical foundations of non-positivism/internal realism draw attention to the role of inter-subjectivity in interpretation and construction of case study investigation, and of the interplay of facts and values in the construction of a reality under study and of the development of knowledge.

Acceptance that a researcher's observations are value- and theory-laden leads one to the benefits of an 'epistemological bootstrapping' process that produces partial frames of foot holding insight which anchor in initial guiding insight from the extant literature, the world of small business practice and the researcher's own experience base – and at the same time make explicit opinions and values underpinning those frames of insight. This foot holding process is, moreover, a crucial vehicle in addressing the criticism that case study research is 'little more than common-sense storytelling' by providing the guiding partial frames of insight to structure toward a process that produces 'rich' 'thick' case understanding of the small business development context.

Ultimately, this bootstrapping process yields the conceptual framework for the research. It also produces a variety of dimensions of 'triangulation' (Maxwell, 1996) whereby a cross-section of vantage points are used to help in the inter-subjective construction of a small business reality under investigation. These include: (a) theory/concept triangulation (from the literatures bootstrapped); (b) key informant triangulation; (c) method triangulation (for example, interviews; observation; analysis of small business documentation); and (d) different levels of triangulation (the macro small business operating context level and the micro small business management processes levels).

1.8 Aims of the Study:

In outline the aims of the study are to investigate:

- the nature and form of strategy development and management activities and processes within small-medium sized enterprises
- the extent and ways SMEs draw upon information technology and the Internet technology in strategy development activities and processes
- key facilitators to the uptake of Internet related management vehicles
- key constraining forces restricting the uptake of such management vehicles
- how small businesses transform externally derived insight and information into organisational learning

1.9 Summary of Chapters

Chapter 1 (this Chapter) provides a skeletal overview of the study in terms of the topicality of emerging developments of ICT, the problem context with regard to low level extant understanding of small business developmental issues and the implications for determining the potential of ICT applications for such small businesses. The chapter summarises the study aims and the innovative research approach developed to address the research aims.

Chapter 2 addresses the development of the research methodology and method to be utilised within this study. It considers the issue of underpinning philosophical foundations of the research in terms of compatible epistemological/ontological foundations. The role of the base epistemological bootstrapping process is elaborated and the mainstream empirical research approach is developed.

Chapter 3 commences the base 'bootstrapping' research process through critical analysis of the small business, strategy development and ICT literatures.

Chapter 4 continues the base 'bootstrapping' critical examination of the ISH/Internet technology literature.

Chapter 5 fulfils a synthesising role by revisiting the dimension of the respective literatures analysed and making explicit the partial guiding frames of insight embedded therein.

Chapter 6 completes the epistemological bootstrapping process and utilises the outputs of this process to elaborate the conceptual framework underpinning the study. The chapter presents a pilot study to bootstrap base insight from the 'world of small business management practice' in order to firm up the literature produced partial frames of guiding insight. Those firmed up partial frames of guiding insight guide the study to build up a conceptual research framework. This conceptual research framework then elicits the research objectives and research questions. Which, together with the firmed up partial frames, are used for the generation of the case study interview instrument and appropriate analytical components to underpin the subsequent empirical case study approach of this investigation.

Chapters 7, 8, 9 and 10 present four in-depth case studies in the form of descriptive analysis which teases out the developmental context of four small high tech firms and its uptake/non uptake of ICT. The analysis utilises an initial full holistic contextual analysis component, a fractured-in-context analysis component focusing in depth on discrete development areas of enabling/ constraining context impacting the firm's ICT utilisation and a re-contextualising component which pulls back the fractured insight into the 'big development' picture.

In Chapter 11 an in-depth comparative analysis of ICT/Internet usage of the four case firms is presented from the perspective of the holistic frame of internal and external operating environmental contexts. This incorporated an analysis based on Angehrn's ICDT virtual-space model. A matrix-based summary view of ICT/Internet's organisational contextual usage for each individual firm is also provided in this chapter.

Chapter 12 offers conclusions in the form of summary implications of research findings, answers to the research questions, limitations of the study and a message for small business support providers.

Chapter Two

*Research Design:
Toward
A
Bootstrapping-Based
Research Approach*

CHAPTER TWO

RESEARCH DESIGN: TOWARD A BOOTSTRAPPING-BASED RESEARCH APPROACH

2.0 Introduction:

The main objective of conducting research is to enrich the epistemology through finding answers to some of the many unanswered questions associated with various natural and social phenomena. In order to achieve this satisfactorily the conducting of research must conform to a certain set of scientific rules. This gives research a meaning and direction (Phillips, 1976). Those rules have evolved "*to ensure the integrity, reliability and reproducibility of work*" (Remenyi and Williams, 1995).

On the other hand, the Information Superhighway (ISH) technology, popularly known as the Internet technology, is a member of the Information Technology (IT) family. This technology with its low maintenance costs and instant worldwide accessibility has brought many opportunities to its users; most of them are yet to be unfolded. For the past four years the use of Internet technology in the commercial environment has been growing at a phenomenal rate. The literature studied in the context of this present investigation suggests that IT technology, if properly integrated with an organisation's corporate strategy, would improve the competitive posture of the organisation. The literature also indicates that alignment of IT with organisational strategy requires re-orientation of organisational strategy and structure. The literature on the Internet/ISH technology suggests that this technology will fundamentally alter the way businesses are currently run. Within a small business context the SME literature highlights that in many instances the mental paradigm of the owner-manager acts as the constraining/enabling frame influencing the success or failure of the firm. The SME literature also suggests that to survive and to thrive in an unpredictable and unstable environment the small firm must communicate with its external environmental change agents and learn how to re-orientate in order to cope up with

the external changes. However, it is not clear in the literature (a) how the IT/ISH technology could be integrated within organisational strategy and (b) how SMEs will re-orientate themselves so as to be able to avail the full potential of this emerging ISH technology to improve their organisational learning processes in order to enhance their competitive posture. The purpose of this present empirical study is to endeavor to contribute toward the addressing of such questions.

Emphasis is made at this point of the rationale for structuring consideration of research methodology at this stage of the thesis. The literature review element of this research is developed as an integral footholding component of an initial base epistemological bootstrapping process. It is therefore appropriate to address the research approach in its totality prior to commencing the ‘bootstrapping’ process. This chapter thus identifies the research methodology and research methods appropriate to the investigation. Discussion focuses on the various research methods available and considers the relevant influencing factors in relating to choice of research methodology and methods. In this context the research questions are given some prominence over the research methods. As Shulman (1988) emphasises “*we are advised to focus first on our problem and its characteristics before we rush to select the appropriate methods*” (cited by Punch, 1998). Punch (1998) argues “*Thus, when misfit between the parts becomes apparent during the planning of the research it is a matter of adapting the parts to each other*”. He sees the research methods as tools to be used to find the answers to research questions. The remaining part of this chapter thus focuses upon the parameters of research methodology, underlying research paradigms and critical analysis of various research methodologies against research questions as a framework for unfolding an appropriate research approach to underpin the study.

2.1 Research Methodology: Definition

Lee (1991) portrays research methodology as “*an operational framework within which the facts are placed so that meaning may be seen more clearly*”. For Remenyi and Williams (1995) it is a “*procedural framework*” based on scientific rules for conducting a research process.

This study draws upon Strauss and Corbin (1998) in its achievement of clarification of distinction between research methodology and research methods. The build up of the research approach in its totality thus posits research methodology as '*a way of thinking about and studying about social reality*'; and research methods as '*a set of procedures and techniques for gathering and analysing data*'.

2.2 The philosophical debate about two main stream research methodologies:

As discussed at the beginning of this chapter the purpose of research is to increase the human knowledge base (epistemology) by studying reality (ontology). For the past three centuries processes of natural science have been considered the predominant way to study reality and have thus taken a dominant role in adding to human knowledge. But there is an increasing doubt among scientists about the applicability of the ways of natural science to all branches of science, especially to social science, for generating knowledge. This is because there is a growing question about the nature of the social phenomena (ontology) or the 'reality' under investigation. That is, whether it is external to the investigator and exists independently of his/her values, judgment and beliefs or it is a product of his/her own cognition (Burrell and Morgan, 1979:4). Is the reality under investigation objective or subjective? An associated epistemological issue is the type of knowledge to be generated. Again, whether it is of tangible objective form based on hard facts or subjective that is to be of a type of feeling and understanding of the observer and is softer in nature.

Inherent to any research is this epistemological/ontological issue falling within a frame of reference of objective-subjective dimension (Burrell and Morgan, 1979:22). Archer (1988) explains that proponents of the ontological stance of objective extreme reality propound knowledge independent of and external to the observer's beliefs, thoughts and values. It is hard and factual and therefore objective. Whilst with the opposite stance reality is a construction of the individual human mind '*it is made up of nothing more than names, concepts and labels which are used to structure reality*' (Burrell and Morgan, 1979:4). Archer (1988) is considering the two extreme views as external-realism and subjective-idealism respectively.

These extreme definitions of reality are purely theoretical, for reference only, and unattainable. For example, existence of the reality/object independent-of-observer view puts the object as 'object-in-itself' mode (Berkeley, 1910; Hume, 1748 in Archer, 1988) which is impossible to achieve due to inability of human knowledge to handle such an object (Archer, 1988:276). Whereas, the subjective extreme (subjective-idealism) of reality raises the question of solipsism (Putnam, 1981) because the construction of reality cannot transcend the observer's own thoughts and beliefs (Archer, 1988:275).

To circumvent the standoff between such extremely polarized ontological stances Archer propounds the potential to view reality as shared view between the observer and object human beings where the reality *'is an intersubjective construction of the shared human cognitive apparatus'* (Archer, 1988:273), this he calls internal realism.

On the issue of epistemology, at the objective end of the continuum is positivism (Archer, 1988:273). Here knowledge is viewed as hard and real based on *'regularities and causal relationships between its consequent elements'* (Burrell and Morgan, 1979:5) and could be transmitted in tangible form where *'facts and values are distinct, and scientific knowledge consists only of facts'* (Archer, 1988:273). The positivist school therefore believes in, and thus searches for, regulatory and causal relationships and so scrutinizes them through empirical testing (Hirschheim, 1992). At the subjective end of the continuum social scientific knowledge *'is ideological and inevitably conducive to particular sets of social ends'* (Archer, 1988:273). Archer calls this normativism. Between these two epistemological objective-subjective extremes he identifies another position which rejects both the fact-value distinction of positivism and the ideological view of knowledge of normativism. This intermediate position posits that facts and values are intertwined in such a way that they are difficult to separate and both are engaged in generating scientific knowledge. This Archer (ibid) calls non-positivism.

Thorpe (1988) suggested that it is the adoption of compatible epistemological/ontological combination that funnels researchers into one of two base methodological camps: *'basically there are only two designs that are possible in research and these equate to fishing and trawling for data. The fisherman believes*

that in order to understand what is in the sea, all that you need to do is to pull out one or two of the fish and examine them. By studying how one fish works, he could have a good approximation of how they all work. It is realised that care has to be taken with taxonomies in the sense of finding the relevant variables, but once you have a type, then studying one or two will, it is thought, give tremendous insight into all sorts. The trawler on the other hand prefers to dredge the ocean to pull out as many fish as he can. Assessment of types is done by correlation, comparison and examination of what has been caught in the trawl'.

Wyer and Kaur Johl (1997) explain how Thorpe uses this analogy to underline the base differences between positivist (trawlerman) and normativist (fisherman) based methodologies. If a researcher enters the trawlerman camp, (s)he is adopting an acceptable epistemological/ontological combination of positivism/external realism. Positivism views the researcher's observations as independent of his/her values and beliefs and thus propounds the possibility of value-free knowledge. Reality within a context of external realism would be viewed as independent of the researcher studying it.

If a researcher enters the fisherman camp (s)he is adopting an acceptable epistemological-ontological combination of normativism-subjective realism. A key issue here is the contention that the study of behaviour or organisational behaviour requires that the researcher needs to get close to the research focus and conduct detailed analysis. Normativism propounds the deriving of conclusions expressing a value judgement; whilst subjective realism sees an individual constructing his/her own view of reality.

Utilising these two base 'camps' as frames of reference highlights the development potential for the research: (a) come out of the 'trawlerman camp' adopt an independent researcher approach and claim research rigour from this independence; adopt an underlying quantitative approach drawing in large samples of insight and produce generalisation from statistical analysis of the numerous organisations involved in the research; or (b) come out of the 'fisherman camp' and derive rigour from close and intimate examination of a small number of sample organisations. It seems, however, that researchers face a danger of crystallising into either 'objective'

or 'subjective' paradigms. Moreover, taken to a limit of absolutism with regard to the link between methodological paradigms and some matching research method, one could argue that ability to utilise numerous and different research methods can be pre-empted by sitting in one methodological camp or the other. It has been the intention of this study to seek out and sit within a paradigm which displays compatible epistemological-ontological combination which (a) facilitates the view that facts and value may be involved in the development of knowledge; and (b) that reality is an inter-subjective construction. Thus, drawing upon Archer (1988) this research study adopts a compatible epistemological-ontological combination of non-positivism/internal realism. This standpoint posits knowledge as neither value-free (positivist) nor fact and value as totally indistinguishable (normativism). And reality is not viewed as existing independently of our construction of it (external realism) or individually constructed (subjective idealism).

The above intersubjective view of reality calls for an interpretive approach to organizational investigation because *'The interpretive approach to organizational research maintains that the methods of natural science are inadequate to the study of social reality. This school of thought takes the position that people, and the physical and social artifacts that they create, are fundamentally different from the physical reality examined by natural science. The interpretative school of thought maintains that, because the world of intersubjectivity created meanings has no counterpart in the physical reality of natural science, the methods of natural science are, at best, inadequate to social science'* (Lee, 1991:347).

Such a philosophical standpoint, moreover, offers the potential for 'methodological rapprochement' (Archer, 1988) in that qualitative and quantitative research strategies can be adopted within the same study if appropriate.

2.3 Research Methods:

The schools of thought above give rise to different research approaches for conducting an empirical research.

An empirical research process consists of various stages. One of the stages is to collect data from various sources. There are various methods available to researchers for this purpose. However, all of those methods fall within the paradigms discussed within the previous section. Cresswell (1994) describes quantitative research in terms of collecting data typically through “*structured pre-determined research questions, conceptual frameworks and designs*”. While the qualitative paradigm uses non-numerical and unstructured data where research questions are more general in nature at the start but become focused as the investigation progresses. Strauss and Corbin (1998) however argue the possibility of collecting numerical data by interviews which is a process within the qualitative paradigm. Gummesson (1991) also views the possibility of collection of numerical data within both paradigms.

The qualitative paradigm facilitates a number of methods for collecting data (Miles and Huberman, 1994). The most commonly used methods are (a) action research; (b) case study; (c) longitudinal study and (d) interviews; while experimental and survey methods fall within the domain of the quantitative paradigm.

In more detail these research approaches involve the following:

Action Research: According to Reinharz (1989) action research is a method where projects attempt directly to change behaviour and gather and analyse data concurrently. They intervene in and study a continuous series of feedback loops. Action and evaluation proceeds simultaneously (McNeill, 1990). McNeill argues “*action research as a method in which the researcher is actively involved in planning and introducing some change in policy and then using their research expertise to monitor and possibly evaluate its effect*”.

Case Study: With regard to case study method, McNeill (1990) argues that social research does not necessarily need to be based on a number of samples. A case study involves in-depth study of a single sample of whatever the researcher wishes to investigate. This study may lead to further wide-ranging research later. Punch (1998) argues that one case or a small number of cases may be studied in detail using whatever methods seem appropriate. The overall objective is to develop as full an understanding of that case as possible. Based on Stake (1994), he further argues that

there are three types of case studies: (a) Intrinsic: which is carried out in order to better understand a particular case; (b) Instrumental: where a particular case is examined to derive insight into an issue and/or refine a theory; and (c) Collective: an instrumental case study to cover several areas to facilitate learning about a phenomenon or general condition.

However, one common criticism about the case study method is that it is based on a very narrow focus and therefore it is not possible to generalise the phenomenon from it (Punch, 1998). Gummesson (1991) points out that the case study method lacks the credibility of a scientific method because: (i) case studies lack statistical validity; (ii) they can be used to generate hypothesis but not to test them and (iii) generalisations cannot be made on the basis of case studies.

Yin (1989), however, disputes this view: “...*case studies, like experiments are generalisable to theoretical propositions and not to populations or universes*”. Based on Yin’s (1989) perspective, Chetty (1996) argues that with case study methodology a researcher makes analytic generalisation by expanding and generalising theories in contrast to statistical generalisation of enumerate samplings.

Yin (1989) asserts that the case study method’s unique strength lies in its ability to measure and record behaviour (Chetty, 1996). A further strength of the case study method is its versatility in terms of its ability to collect data by means of both qualitative and quantitative methods, which include interviews, observation both direct and participant, and examination of documents, archive records and physical artifacts (Chetty, 1996).

With regard to the characteristics of case study, Yin (1989) argues that it is an empirical inquiry where: (a) a contemporary phenomenon is investigated within its real life context; (b) the boundaries between the context and the phenomenon are not clearly defined; and where (c) multiple sources of evidence are used. In his view, single and multiple cases could be investigated.

Longitudinal Study: A longitudinal study makes use of observations at various times over the lives of the individuals studied. At times this can be achieved by studying

previous records and linking and comparing the derived information to present observations (Bonniface, 1995). The advantages of longitudinal studies are that they make it possible to encapsulate change over time, though as a series of snap-shots rather than a continuous process. One of the disadvantages of the longitudinal method is that it is a long-term process (McNeill, 1990).

Interviews: Sarantacos (1998) defines interview method as a form of questioning characterised by the fact that it employs verbal questioning as its technique for the purpose of gathering data. Punch (1998) argues that it is one of the main tools for collecting data in qualitative research. He further adds “*it is a very good way of accessing people’s perceptions, meanings, definitions of situations and constructions of reality*”. Jones (1985) argues “*in order to understand other persons’ constructions of reality we would do well to ask them ...and to ask them in such a way that they can tell us in their terms (rather than those imposed rigidly and a priori by ourselves) and in a depth which addresses the rich context that is the substance of their meanings*” (cited in Punch, 1998).

There are many types of interviews (Sarantakos, 1998). Fielding (1996) divided them into three main groups: (i) standardised (ii) semi-structured and (iii) non-standardised (in Punch, 1998). For Sarantakos (1998) a structured type interview is based on a strict procedure and a highly structured interview is more a form of questionnaire. This form of interview is employed in quantitative research. Unstructured interviews have no strict procedures to follow as in the structured. There is no wording of the questions or format in the ordering of the questions. This type of interview is mostly used in qualitative research methodologies. Semi-structured interviews, he continues, lie somewhere between the structured and unstructured types. Here the rules and elements of both types are incorporated. However, the degree to which semi-structured is closer to either of them depends on the research topic, purpose, resources, methodological issues and preferences and type of information sought. This type could be used within both the quantitative and qualitative research methods.

Experimental Method: Bonniface (1995) defines experimental method as the intervention by the researcher into the lives of individuals in order to assess its impact

on them. In this context an experimental method is understood to be a formally arranged investigation, which aims to identify the cause-effect relationship.

Survey Method: A survey may be defined as a study of a phenomenon and collecting information without any intervention into the phenomenon itself by the researcher (Bonniface, 1995). Simon (1969) emphasises that “A survey gathers data about variables as they are found in the world”. Gable (1994) argues that in a survey approach data from a large number of sources are collected through methods such as mail-questionnaire, telephone interviews and/or from published statistics. The survey method then tries to establish common relationships through analyzing those data and therefrom tries to generalise the cause and effect relationship existing within the phenomenon studied. Sarantakos (1998) argues that this method is less expensive, produces quick results, is convenient and offers anonymity. It also offers wide coverage with a focus on the subject and the respondent can be approached more easily. However, on the other hand, the questionnaire technique is not probing. Also, it does not offer additional information in that it lacks probing and clarification of answers.

2.4.0 Critical Analyses: What is Inappropriate and Appropriate Research Method for this Study?

2.4.1 IT/IS research falls within social domain for research:

In the context of Information Systems (IS) research, Galliers and Land (1987) argue that IS research used to reside within the domain of technology. There is growing realisation of IS's increasing influence and consequent impact on individuals and organisations they serve. Any attempt to view the IS and/or its impact alone will remain incomplete unless the server and the served are seen altogether. This holistic view adds further complexity leading to more than one interpretation of a phenomenon associated with IS. They continue to suggest that IS research will remain incomplete unless those organisational and human issues are considered in the context of choosing an appropriate research methodology/methodologies.

2.4.2 The Internet is a nascent and evolving branch of IS discipline:

The Internet is a new member of the IT/IS discipline. It is so new that it may be considered still in its embryonic stage as it came into public use less than a decade ago.

Although much has been said about the potential of the Internet as a vehicle for business and commerce, little is known about its strategic application by small business. This is largely due to the newness of this technology and its protean nature. Therefore, there remains much to explore in this domain. Considering the Internet's age and its rapid development over the short span of its life, it is comprehensible that a dearth of knowledge exists on its impact on the small business sector, or its strategic usage by small businesses in their organizational activities such as marketing, product development, R&D, finance. In this regard, the field of strategic business application of the Internet by small businesses could be considered as immature and nascent and is open for further exploration or investigation.

2.4.3 Suitability of the qualitative paradigm as a research approach to investigate an immature subject area:

For Kuhn (1970) two methodological paradigms exist for organisational research. These are either '*inquiry from outside*' or '*enquiry from inside*'; that is to say, from the ontological point of view depending on '*whether the 'reality' to be investigated is external to the individual - imposing itself on individual consciousness from without - or the product of individual consciousness*' (Burrell and Morgan, 1979:1). By defining these metaphorical models we '*increase the understanding and appreciation of epistemological issues in organisational enquiry* (Evered and Louis, 1981:386).

Evered and Louis (ibid) argue that '*enquiry from outside*' requires existence of a priori analytical categories as a guiding framework for gathering data. This is known as the positivist approach to conducting research. However, in the absence of such a priori knowledge bases or '*taxonomical categories*' (Archer, 1988:284) about the subject under study, the investigation needs to follow the '*inquiry from inside*' model where the '*nascent*' and '*immature*' subject (Archer, 1988:284) area with its absence of '*a priori knowledge*' or '*taxonomic categories*' directs the researcher to engage in

experimentation in order to understand a particular situation. This is a qualitative approach to research which can be found in ethnomethodology, anthropology and clinical methods (Evered and Louis, 1981). This *'insider'* strategy is useful for *'generating tentative categories....'* which can *'...subsequently be used as the a priori categories guiding the more deductive hypothesis-testing from the outside'* (ibid: 390).

2.4.4 Qualitative methods are suitable for studying 'open-ended' change processes:

A small business with its inherent resource constraints, inability to control its markets or raise entry barriers and in an unstable operating environment is in a situation known as 'open-ended' change (Stacey, 1990, 1993:251). Moreover, as explained above, the Internet itself is protean in nature and therefore any system that puts the Internet into application also puts itself into an open-ended change situation. To study a phenomena under such 'open-ended' change situations, a qualitative approach is more appropriate than any other method as the phenomena is under continuous change and thus cannot be captured through means of *"static ... partial and limited of ways"* (Morgan and Smircich, 1980:498).

2.4.5 Selection of an appropriate research method:

In the context of selection of an appropriate research approach Punch (1998) emphasises the need to select appropriate research method(s) which should fit the research questions: that is, be able to focus on and answer the focal research questions. He also asserts that at the design stage two other important factors should be considered: (a) time limit and (b) resources, since it is no good pursuing a method which stretches the resources and time beyond their limits. It is therefore a combination of these constraining parameters and the research questions that are the main deciding factors in choosing a suitable research method.

In the context of selecting an appropriate research method for this study, the experimental method does not fit with the subject or the area of investigation in that this investigation requires collection of information without any direct intervention

into the SME system by the researcher. It is thus inappropriate to adopt the experimental study as a method for collecting information and deriving understanding in this context.

The purpose of this investigation is to study changes occurring without taking part in the change process. It is therefore not the intention to initiate any change within the environment under investigation. Thus, the action research method can be eliminated on the grounds that this methodology involves the researcher as a participator and/or as an initiator.

The longitudinal method involves the periodic observation of a phenomenon at intervals over the life cycle of the observed individual to facilitate following the change process without intervening in the process itself. The data can be collected from previous records and compared with the present observed data. This is quite a lengthy and time-consuming process, and therefore cannot be considered in the context of the time limit of this investigation.

Of the main-stream research approaches we are left with the case study, interview and survey methods. These methods have their own merits and demerits which were discussed earlier. In the context of this investigation a comparative consideration of these methods is made against the research questions in order to determine which one is the most fitting.

Based on Yin, Gable (1994) suggests that single case studies are appropriate if the purpose of the research is to explore a previously unresearched subject while multiple case study is desirable where the object of the research is to describe, to build or to test a theory.

On the other hand, Ackoff suggests that the survey method normally serves the purpose of verification rather than discovery (in Locke, 1989). Attewell and Rule (1991) consider that survey methods alone are inadequate in addressing many issues in the Information Systems (IS) research (in Gable, 1994). They also suggest that in the context of IS research "*a multi-method approach is more effective*". Walker (1985) argues that "certain questions cannot be answered by qualitative methods,

while others cannot be answered by quantitative ones” (in Bryman, 1996). Referring to Bikson’s (1991) study of IS in relation to organisations, Gable (1994) points out how Bikson used a mix of information-gathering approaches including structured interviews, questionnaires, archival material and observation. Gable recommends using several methods of data gathering in order to address the ‘impact of information technology’ in information technology research. Danziger and Kraemer (1991) and Attewell and Rule (1991) suggest that, with regard to IS research, survey and case study methods can be viewed as complementary to each other rather than competing (in Gable, 1994).

Cassell and Symon (1994) emphasise that qualitative methods are sensitive enough to allow the detailed analysis of change in organisational research. While with quantitative methods of data collection it could be possible for the researcher to show that a change has occurred over time, it can not, however, show how it has occurred. With qualitative methods it may be possible to answer the question of how. In order to obtain a holistic view in organisational analysis, mixing of both qualitative and quantitative approaches are favoured by Simon (1969), Easterby-Smith et. al.(1996) and Cassell and Symon (1994).

Simon (1969) argues that in empirical research “*several methods together may provide better and cheaper answers than any single method can*”. It is to be noted that the questionnaire and interview methods fall within quantitative and qualitative paradigms respectively.

In his investigation about the strategic changes of firms and their competitors Grønhaug and Falkenberg (1989) used a mix methods of semi-structured interviews, questionnaires and survey methods to gather data. In their investigation they deliberately chose firms as their samples which are engaged in the same business. They did this in order to get a ‘homogeneous’ sample so that they could investigate the firms (a) exposed to similar environments and (b) perceive themselves as competitors to each other.

Remenyi and Williams (1995) emphasize that, in the study of information systems, along with case studies and participant-observation methods structured and semi-

structured interviews allow complex and rich evidence to be gathered. In their view “*structured and semi-structured interviews allow detailed evidence to be elicited from individual informants who are encouraged to raise and suggest issues and problems which they regard as important to the issue being researched*”. In their view “questionnaires usually elicit specific replies which are normally amenable to quantitative analysis”.

In her investigation on the strategic change processes of UK science-park based small high-tech firms, Berry (1998) used both questionnaire and in-depth interviews. She argues that this ‘complementary methodology’ is based upon the relative strengths of the approaches, which provided a comprehensive tool for gathering both quantitative and qualitative data. In her methodology the questionnaire gathered descriptive and exploratory data about the samples under investigation “*while in-depth interviews enabled a detailed examination of the nature of planning activities in small high-tech firms and the role of the entrepreneur in this process*”.

Bamberger (1989) used a mixed methodology of questionnaire and personal interview techniques in his empirical study on approaches taken by SMEs to gain competitive advantage. He carried out the interviews with top managers “usually the owner-manager or a senior manager” to discover “the manager’s perception of market, industry characteristics, objectives and strategies”.

Chen and Williams (1998) used both questionnaire and in-depth interview techniques to study the impact of EDI technology on UK based SMEs. Their purpose for using the questionnaire was “*to collect background statistical data on the firms*”. The questionnaire studies were complemented by in-depth interviews with “key personnel” in order to gather data on the effect of EDI on the organisation issues such as the role of owner-manager, inter-organisational relations, the order of flexibility and attitude or responsiveness of the owner-manager to the technology.

Clearly, the build up of ‘holistic picture’ of ICT within small business organisations may require the complementary utilisation of different research methods. The aim of this research is to enhance understanding of ICT within the strategic development context of small business. In order to reveal ‘deep’ understanding, a central case study

research method is adopted and has been revealed as appropriate by an epistemological bootstrapping process (Archer 1988; Wyer, 1990) which is discussed after the following section.

2.4.6 Linking the philosophical standpoint of internal realism to the research design process:

In the previous sections the author discussed the justification of his adaptation of the 'non-positivist-internal realism' philosophical paradigm and a multiple case study-based qualitative research approach as the foundation of his study.

Therefore, prior to designing the research on the premise of this philosophical paradigm the pros and cons of the above paradigm are analysed.

Firstly, as with any other qualitative research process internal realism requires construction of a conceptual framework to foothold the research (Maxwell, 1996:3). This conceptual framework needs to be based on relevant knowledge i.e. existing literature, personal experience and knowledge generated from interactions and discussions with practitioners in the field (ibid). This conceptual framework facilitates the researcher by anchoring in relevant existing understanding in a 'pre-knowledge' (Archer, 1988:296) situation. It also facilitates the researcher in footholding the research through enabling him to construct research objectives and raise the necessary research questions.

In other words, the conceptual framework acts as a 'node' linking up down- and up-streams of research stages in that it links up the existing knowledge base to the subject under study, through not least though helping to make explicit the research objectives and research questions.

Secondly, the non-positivism/internal realism stance bridges the gap between positivism/external realism and non-positivism/subjective idealism research approaches. For Archer (1988:278) '*...internal realism provides a bridge between the practitioners of two different types of research design....*' those '*...have the potential to complement each other in important ways....*'.

Thirdly, internal realism is transparent to the controversial issue of requirements of different epistemological criteria for social and natural sciences because, according to Archer (1988:272), of social and natural sciences it is debatable which one is more normative than the other (as the former one is more value laden than the latter). For him it is the social science that better problematises the normative issues.

This third point is of particular relevance to the subject of study of the impact of the Internet (a branch of natural science) on the strategy building process of small businesses which falls within the social science domain.

2.4.7 The Epistemological Bootstrapping Process:

For Archer (1988:285) ‘.. *in any research the researcher requires a set of taxonomic categories..*’ as a premise for collecting data in order to select which is to be discarded as extraneous and which is to be kept as relevant. Those ‘taxonomic categories’ provide a down-stream link between ‘interpretative’ and ‘explanatory’ theories which provide the facts and explain present development stage(s) respectively.

However, for a nascent discipline like an ‘*applied social science field such as management*’ (Archer, 1988:284), such ‘*positive heuristic*’ (Lakatos, 1970, a, b) linkages barely exist because of the immaturity of the explanatory theory (Archer, 1988:285). In such cases Archer (ibid) devised a novel approach for constructing the conceptual framework for research. In parlance with the computer system software loading technique, he proposed a ‘*proto-interpretative theory*’ that can be utilised to ‘*read in data*’ and load them ‘*with its own assumptions*’. He named this ‘Epistemological Bootstrapping’.

Archer (ibid) further argues that, except for one notable difference, this process is similar to Glaser and Strauss’ grounded theory (1967) approach where ‘*The sociologist may begin the research with a partial framework of “local” concepts, designating a few principal or gross features of the structure and processes in the situations that he will study.....these concepts give him a beginning foothold on his*

research. *Of course he does not know the relevancy of these concepts to his problem- this problem must emerge- nor are they likely to become part of the core explanatory categories of his theory....*' (Glaser and Strauss, 1967:45). Archer's bootstrapping process is *'...essentially a process of trying to establish accounts of phenomena that are candidates for factual status....'* (Archer, 1988:293). That is Glaser and Strauss' bootstrapping is part of the research in contrast to Archer's process as a precondition to the research.

In the context of small business research, Wyer (1990) has shown the practical application of Archer's model where he demonstrated the step-by-step approach to the application of the epistemological bootstrapping process in building up of a final conceptual research framework from extant literature, personal experience and interaction with small business practitioners, utilising 'loose' and 'tight' bootstraps. For Wyer (1990) epistemological bootstrapping was utilised as an integral part of the research process (rather than essential pre-search as with Archer). Moreover, Wyer determined the potential of extant knowledge in the area of small business development in helping to couch dimensions of research problems to be investigated. This involves providing a robust but flexible guiding structure in applying case study investigation of small firms (a key contrast from the Glaser and Strauss' grounded theory approach).

2.4.8 Relevancy of the application of the epistemological bootstrapping process to this research:

In the preceding chapter the author highlighted that although the critical mass of UK businesses are small businesses, this area of study has been somewhat neglected until recently. Moreover, the small business literature suggests that little is known about small business operating contexts and their strategy development processes (Wyer, 1990; Woods and Joyce, 1993; Wyer and Mason, 1999; Wyer and Smallbone, 1999). The small business management area, as with many other areas of management, is therefore a rather *'unexplored and nascent area'* (Archer, 1988:285). For Archer (ibid) *'the exploratory theory is too underdeveloped....'* in management discipline *'... to suggest anything at all clear and unambiguous in terms of taxonomic categories and concepts of relevance'*. Archer would find small business management to be

rather immature and at pre-theory level. Carson (1991) contends that little is known about the marketing activities of small firms. Whilst Wyer and Smallbone (1999) view small business strategy building as often spontaneous and emergent this requires further exploration to determine the nature and form of its predetermined and unintended or emergent dimensions.

In short, from the consideration of the various perspectives on the state of the Internet, small business management and small firm strategy building processes, one can conclude that extant knowledge bases in these areas are immature and at a relatively nascent stage. Therefore, it is appropriate to design this research study on the premise of an epistemological bootstrapping process following the seminal works of Archer (1998), and Wyer's (1990) adaptation of the process.

2.5.0 The Developmental Components of the Research Approach Facilitating the Study: The Research Design

Due to the nebulous nature of the extant knowledge base of the subject area, the design of the research framework is based on the concept of the epistemological bootstrapping process where the framework is divided into two developmental components:

1. Development of a conceptual research framework with the application of a form of epistemological bootstrap process and,
2. Development of appropriate research methods and analytical instruments for conducting empirical investigation.

2.5.1 Development of the Conceptual Research Framework:

The conceptual research framework is developed as follows:

a) A base epistemological bootstrap component: This is a 'loose' (Wyer, 1990) bootstrap approach to foothold the research by constructing an initial conceptual framework based on partial frames of guiding insight. Those partial frames are derived from the critical analysis and synthesis of relevant areas of literature and the

author's personal experience. This initial conceptual framework will unfold the initial research objectives and input to raising the initial research questions. Those initial 'local' frameworks (Glaser and Strauss, 1967:45) will then be used as a premise for further discussion with specialists in the arena, such as the regional business link, Hertfordshire county council and specialist academics. The derived knowledge will be utilised to adjust or modify the partial frames as necessary.

The modified partial frames along with the initial research objectives and research questions input to preparing a question-based interview instrument in order to direct the researcher dialogue with appropriate small business practitioners to facilitate collection of contemporary data on the subject. A telephone based pilot study is carried out on the basis of the questionnaire instrument. This pilot study is carried out on 12 Hertfordshire high-tech SMEs and has been explicitly reported in chapter 6.

b) At the 'rigid' bootstrap phase the outcome of this pilot study is then examined and analysed against the extant literature. The partial frames are re-structured, modified, added or removed on the basis of this data. This exercise also tests the validity of the bootstrapped based research design.

The above 'loose and 'tight' bootstrapping phases are in fact an inductive- deductive-inductive process of looping between the extant knowledge and practitioners in the field so as to firm up the conceptual framework. This firmed up conceptual framework will yield the clarified research objectives and refreshed research questions.

Table-1 on page122 holistically represents the bootstrapping process in terms of the partial frames of guiding insight revealed by the process and the resultant firmed-up research objectives and research questions together with key informants with whom interface is necessary to obtain answers to the unfolded research questions.

2.5.2 Development of the Research Method and Analytical instruments to conducting rest of the research process:

The bootstrapping in its revelation of the research focus (objectives) has in turn fed insight to inform development of the second component of the research approach: that is to say, the appropriate research method for fulfilling of the identified research objectives. The investigative theme highlights the need for understanding of how small firms sustain strategic development over time (in terms of adjustments to markets, products and/or processes activities) and the role and potential role of IT and the Internet in effecting that development. Achievement of such an investigation is calling for a contextual, processual analysis of small firm strategy development processes, thus providing a 'big picture' context for an holistic consideration of how small firms anchor IT support vehicles (or could anchor such vehicles) to facilitate or underpin such development. The research vehicle for affecting such an holistic investigation is the case study. The mainstream methodology of this study (that is the follow through from the initial base epistemological bootstrapping process) is thus as follows:

- a) The bootstrapping process in raising research objectives also allows for the outline synthesized presentation of the sub-components of derived foot holding insight in a bootstrap diagrammatic form. This in turn acts to inform the design and development of a case study interview instrument which provides a broad "informing frame" of questioning to be pursued with the participant case study firms.
- b) Also within the 'bootstrap' is guiding insight to inform selection of the participant case study small firms; and to provide for development of a standard protocol to guide the approach to the firm and conducting of the interview process.
- c) Integral to the bootstrapping process has also been consideration of a literature input relating to compatible epistemological/ontological philosophical foundations underpinning the research process. The base assumption in this respect is one of interpretive reality - rather than the

build up of some objective reality based upon maintained researcher independence, it is assumed that an inter-subjective interpretation of the case study small firm operating reality under investigation will be built up (see research methodology discussion above).

- d) The build up of the case study picture derives from the following research methods:
 - (i) Interaction and interview with the pivotal small firm actor: the owner manager
 - (ii) Observation of operational processes with the firm.
 - (iii) Interface with external key informants on the boundary of the participant small firms activities such as, Hertfordshire county council officials/consultants, Hertford Business Link, academics and researchers.
 - (iv) Analysis of small firm artefacts and documentation.

- e) Such build up of insight allows for attention to be afforded to the issue of quality of research findings through the utilisation of 'triangulation' (Banister, Burman, Parker, Taylor and Tyndall, 1994):
 - (i) Data input triangulation.
 - (ii) Key-informant triangulation
 - (iii) Theory and concept triangulation (through the base literature analysis and feed in to the bootstrap).
 - (iv) Method triangulation (the case study draws upon some quantitative environmental data analysis as well as base qualitative investigation)
 - (v) Level of environmental triangulation (including macro and micro operating contexts).

- f) The bootstrap also facilitates parallel design of appropriate analytical processes/sub-processes (parallel to case study, interview instrument design) to ensure research case study insight is derived in a form suitable for analysis. These analytical processes are framed on the basis of extant

literature (For example, the ICDT model; Angehrn, 1997) and knowledge bases.

- g) Analysis will where necessary focus on 'critical incidents of ICT-related activities' (such as key, over time, changes in a small firm's markets, products and/or process activities) so as to produce depth of insight as to given Internet/IT inputs to such development processes.
- h) An ultimate 'descriptive analysis' of 'critical ICT-related incidents' across the three participant case firms will portray, 'common themes' of IT usage/strategy development process and activities and 'differences' as a basis from which to offer conclusions with regard to the issues of IT uptake, constraining and facilitating features and the interconnectivity with small firm strategy development processes.

The 'descriptive analysis' will portray a full contextual picture of the overall development of each participant small business and overview of ICT activities therein. A fractured analysis-insight will tease out in-depth fractured but in-context rich understanding of ICT activities. And a recontextualisation analysis will pull the insight and understanding back into the holistic picture.

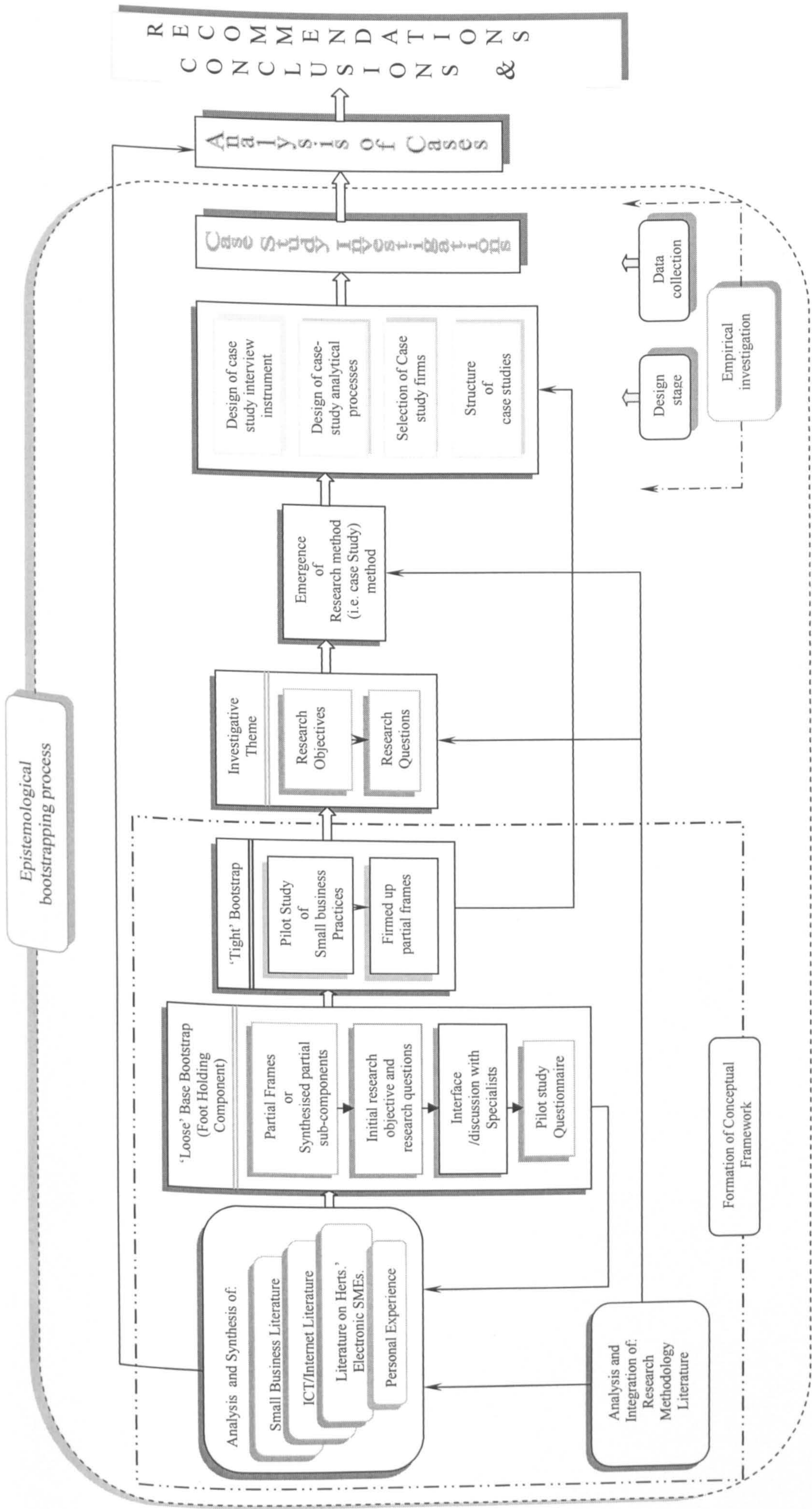


Fig-A: OVERALL RESEARCH FRAMEWORK: UTILISING EPISTEMOLOGICAL BOOTSTRAPPING PROCESS

Chapter Three

*Commencing the
Bootstrapping Process:
Drawing on the Small
Business Literature*

CHAPTER THREE

COMMENCING THE BOOTSTRAPPING PROCESS: DRAWING ON THE SMALL BUSINESS LITERATURE

3.0 Organisations as Systems

The word organisation evolved from the Greek word 'Organon' meaning an instrument or a tool. In an organisation humans assemble at a specific venue(s) at specific time(s) in an organised fashion so as to exchange their views, opinions, ideas or skills for various purposes. As human societies became more and more complex with time so did their organisations.

In order to understand modern organisations the systems school of organisational scientists metaphorically conceived organisations as open systems similar to living organisms. It is imperative to pay attention to the role of a metaphor in order to understand the way scientific theories are constructed. Because '*science of all kinds, whether nominalist or realist in its basic orientation, is primarily metaphorical*' (Morgan and Smircich, 1980:493). Kart and Rosenzweig (1970) portray an organisation in terms of supra- and sub-systems, where an environmental supra-system can be divided into general environment and specific task system sub-components.

In Kart-Rosenzweig's open system model of an organisation the general environment which the organisation operates in is composed of its 'political', 'cultural', 'social' and 'technological' functional components, whereas the task system is composed of trade unions, owners, competitors, suppliers, financiers (e.g. banks), customers and so on. At the core of this structure sits the organisation itself with its marketing, personnel, finance, purchasing and production and other functional sub-systems (Lawrence and Lee, 1993:75). As in the orderly functioning of internal organs of a

healthy living organism, an organisation's sub-systems also require synchronisation of their functioning in order to interact with the organisation's task- and environmental supra-systems so as *'to satisfy and balance'* the organisation's *'internal needs and to adapt to'* the organisation's *'environmental circumstances'* (Morgan, 1983:48) and ensure ongoing survival.

The key issue of a systems approach to organisational development is information. For Lawrence and Lee (1993:76) *'If organizations are to cope with changes in their environment, if they are to operate as integrated units rather than separate sub-systems, then information flow will be of vital importance....the information network is the organization's nervous system without which none of the functional sub-systems could operate'*.

3.1 Small Organisations: A Systems View

The above issue of interaction and communication with its environmental- and task sub-systems for effective functioning and survival is of practical relevance in the case of small businesses. The size related 'smallness' factor of a small business leads it to a simple organisational power structure with the owner-manager sitting at the top of all organisational functionalities and decision making processes (Storey, 1995). A small firm operating within a turbulent and hostile environment strives to progress from the standpoint of this smallness factor and an accompanying meagre resource base (Storey and Casey, 1995), with small market share and inability to dictate the market. The potential is for many small businesses to be more flexible, less formal and opportunistic (Storey, 1995; Welsh and White, 1981) and more communicative with their environmental agents so as to fit with their external environment and ensure survival and evolution (Wynarczyk et. al., 1993). This issue of informality and organic nature of SMEs is inherent throughout the SME sector. Such informality and organisimic behaviour is embedded in cultures of small sized firms and dependant to a great extent on the owner manager due to the overlap of ownership and day to day management of the firm where the owner-manager assumes the central pivotal role (Storey, 1995; Wyer and Smallbone, 1994, 1999).

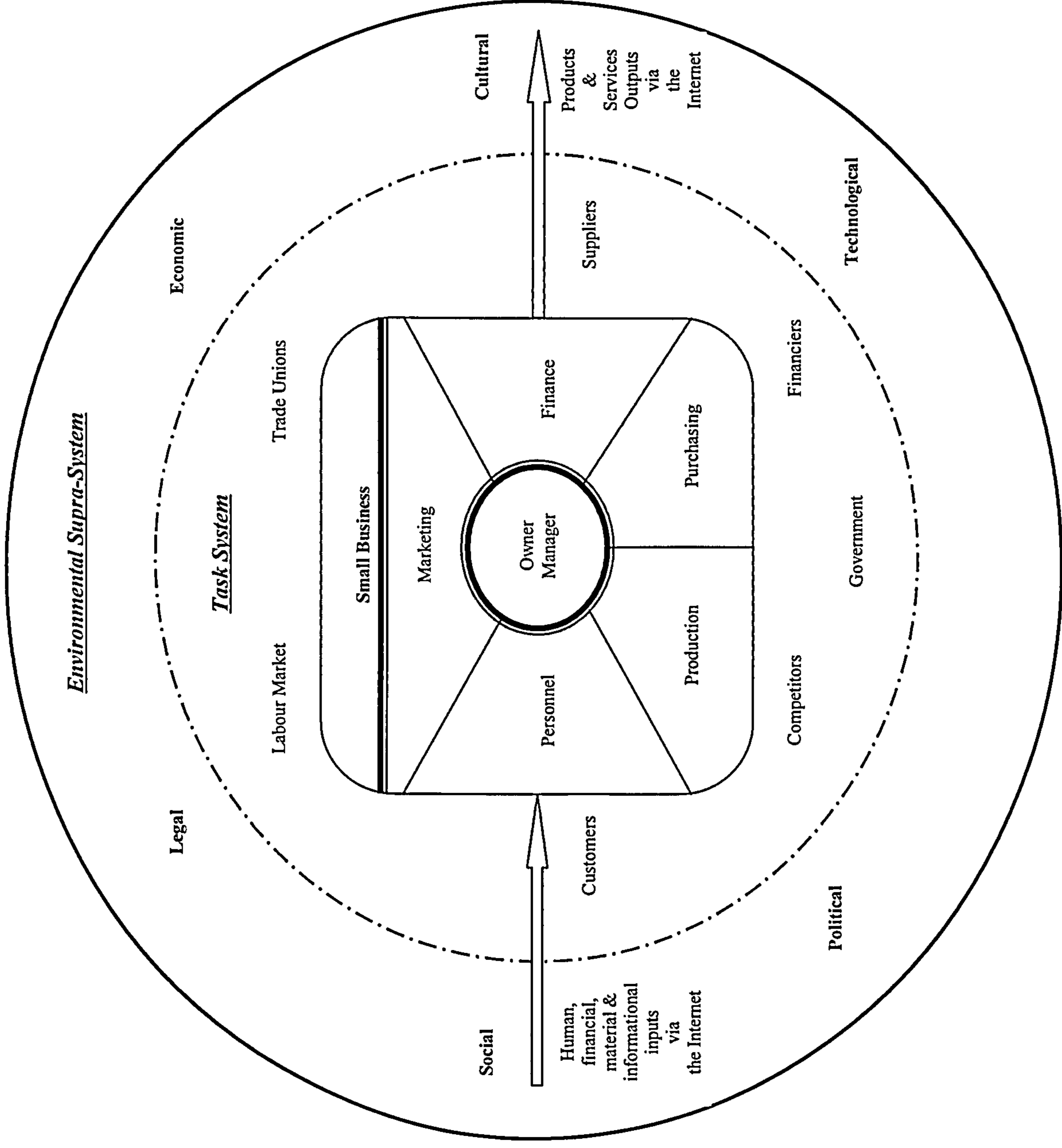


Fig- B: Systems view of a Small Business using the Internet as a media to communicate with its external environment: adapted from Kast & Rosenzweig (1970) and Lawrence & Lee (1993).

On the other hand, the emerging Internet technology is a conduit for communication that can be strategically used as a bridge across the small business's organisational boundary connecting its internal sub-systems (e.g. marketing, production, finance, purchasing and personnel) and opening it up to its external environment to interact and communicate with appropriate environmental agents and fulfil its needs for proper functioning and survival. With its potentially simple internal functional sub-systems and centrally located owner manager controlling and managing all these sub-systems, and with the Internet as one of the media for communication with the external environment, a small business may be considered as an 'open system'. Such a small business within its task sub- and environmental supra-systems is represented in Fig-B.

There is, however, a need to qualify such a positing of the small business. As with every school of thought the systems view does have its limitations integral to the systems model is the proposition that the organisation has clear objectives and that it consists of interdependent sub-systems all with tidy, integrated sub-systems. In reality, it is likely that organisations are made up of individuals and groups of individuals who from time to time will pursue paths of self-interest. Thus, in parallel to positioning the small business as an open system, consisting of interdependent sub-systems, it is useful to draw upon the competing perspective offered by the political school of organisational thought (see for example, Pfeffer. 1992; Pettigrew, 1985)

3.2 The Issue of Defining Small Firms:

Although small and medium sized firms constitute the major proportion of organisations of most modern day economies and countries it is difficult to find a single and simple definition of the small business.

Since recognising that the SME sector is a major contributor to economic regeneration and employment several attempts have been made at different times to find an holistic definition of small to medium firms (Bolton Report, 1971, UK Companies Act, 1985 [section 249], DTI Report 1997). However, each of these definitions has its own shortcomings due to the heterogeneity of SMEs. For Storey (1995) "*there is no single, uniformly acceptable definition of a small firm*".

The latest practical definition developed by the European Commission came into effect from the end of 1997, and is based predominantly on employee numbers and annual turnover of the firms: A 'Medium' sized organisation employs no more than 250 employees with turnover of up to 40mecu, while a firm is considered to be 'Small' if its employee numbers lay between 10 and 50 with an annual turnover of up to 7mecu. A firm employing between 1 and 9 workers is categorised as a micro-business.

In the study of a small business it is crucial to recognise that categorisation of size will relate to the objectives for which the categorisation is being developed. Thus, government support provision for small firms will determine a size definition in accordance with such provision, the Inland Revenue may develop a different definition which may be based upon the small firms to which it is targeting allowances and academics may focus on the definitions/size parameters relevant to their research studies.

Given the need to address the issue of heterogeneity of SMEs and to determine appropriate focus with regard to (a) consideration of messages embedded within the small business literature; and (b) the identification of participant firms for the empirical element of this research, this study utilises the parameters of EU definition to provide a guiding frame regarding organisation size in terms of employees and turnover levels. In recent years, the EU has revised its definition of micro-, small- and medium-size businesses and whilst it can be argued that such definition is no more than an arbitrary classification, it does provide a rough framework to guide identification and determination of the size and nature of businesses that are more relevant to a study that is seeking to enhance understanding of the uptake and utilisation of ICT within business organisations.

The use of a 10 to 49 employees- and significant turnover- 'focal size band' facilitated the enveloping of small businesses that are likely to have clear developmental requirements of the owner manager, including:

- (i) The need for an ongoing nurturing of, and adjustment to, organisation and management activities and abilities

- (ii) An ability to cope with an ever changing environment in terms of significance for and impact on:
 - (a) Existing core markets, products and processes activities; and
 - (b) Incorporating new development opportunities
- (iii) Ability and willingness to anchor-in the potential of ICT/Internet applications to facilitate coping with and managing the development context/issues in (i) and (ii) above.

The employee-base and turnover parameters of the EU definition thus provided an outline framework within which to build other guiding criteria to direct determination of the small business types that would form the focus of this research. To the criteria itemised in (i) to (iii) above, was an additional proviso that the participant case firms within the study should be driven by active growth seeking owner managers, thereby increasing the likelihood of a forward growth roadmap and thus the facing of the developmental features, characteristics, issues and needs embedded within the base criteria.

3.3 Economic and Employment Contribution:

Although SMEs are effectively a major business sector in industrialised countries and are of fundamental importance in the underdeveloped and peripheral European regions, surprisingly, even in developed western economies they still remain inconspicuous in terms of their status in society although they encompass over 99% of total businesses (Stanworth and Gray, 1991). In the UK the SME sector alone represents over 95% of all businesses registered for VAT and employs 65% of the workforce (Storey, 1995), yielding 25% of GDP (NatWest, 1992).

3.4 Key Characteristics of SMEs:

The notion that small firms are merely small-scale versions of large firms and, thereby all the rules, regulations, principles and understanding of management and behavioural features as in large firms are also applicable to SMEs, is a misleading one. Arguably, SMEs are an organisational species with unique characteristics of internal complexity imposed upon them by their small size-related qualities,

idiosyncratic management styles and their operating environmental conditions (Wyer, 1990).

Many attributes of SMEs place them as organisations which have to accept the vagaries of environmental competitive conditions.. For example, the inability of SMEs to influence market price through altering outputs and their inability to create barriers to entry due to their small market share and resource constraints (Storey and Cressy, 1995). Rather they are predominantly 'price-takers' (Storey, 1995) having to build revenues through price-cutting (Welsh and White, 1981). A major distinction, however, is organisational culture. In a large firm the culture becomes more ritualistic and bureaucratic as it becomes more mature and stable (Storey, 1995). In a SME the culture is more informal and organismic. This issue remains inherent throughout the SME sector. This informality and organic nature once again is embedded in the nature of small sized firms and is due to a great extent to the overlap of ownership and management and the central pivotal role of the owner-manager (Wyer and Smallbone, 1999). Most small businesses have a small number of employees; and, a large proportion of them are family owned. There are various socio-economic causes for their foundation as discussed by Storey (1995) and other researchers. Due to their close family ties and/or due to the smallness of the firm, an informal relationship can often be created between the employees and the owner. Moreover, due to this physical closeness and limited financial resources the employees often have to be flexible in undertaking various roles. There is often no single job description for each individual member of the enterprise. In the early stages and during an adverse economic climate the very survival of the firm can also depend on this building out of informality and the ability to be flexible.

Gibb (1983) describes eleven key organisational attributes which impose on a small firm and culminate in its unique 'smallness' characteristics which differentiate it from a large firm. Wyer (1990) argues that the interplay between those 'smallness' factors, previous external environmental enabling/constraining forces and owner-manager's mind-set predominantly determines the firm's ability to handle unfolding unknowable external environmental forces.

Wynatrczyk et. al. (1993) describe SME culture from another perspective based on three key characteristics: innovation, uncertainty and evolution. In discussing their innovative role it is observed that a conspicuous proportion of them were established by an individual with a vision of 'doing something' (Penrose, 1952). The term entrepreneur was coined by economist Cantillon (1755) for an individual who "shifts economic resources out of an area of lower and into an area of higher productivity" (cited by Barrow, 1993).

An entrepreneur usually locates an opportunity in terms of product, or service, and acts proactively to avail that opportunity in achieving his goal through establishing a firm. Although those small firms are unable to influence their environment they occupy quite a significant position through the niché product/service they offer.

As touched on above, one characteristic of a SME is embedded in and reflected by the character of its owner-manager. *"When we come to look at the human and social factors affecting [Small Firms] we can see that firms are in fact as varied and individual as the men who founded them"* (Bolton Report, 1971 pp22). In describing those human and social factors Bolton stressed that it is not the money which acts as a source of motivation but, the satisfaction of personal involvement and a notion of independence. *"The need for 'independence' sums up a wide range of highly personal gratification provided by working for oneself and nobody else". "...a strong feeling of personal challenge and an almost egotistical sense of personal achievement and pride- psychological satisfactions appeared to be more effective motivators than money or the possibility of large financial satisfaction" (ibid, pp23).*

Another differentiating cultural characteristic of a small firm is its management style. The management culture in a small firm is quite different from that of a large firm. In reality it is more complex than it appears. The current management process of a small firm is the end product of owner-manager's mind-set, aspirations, personal ambitions and the external environmental opportunities/threats which impacted the firm in the past (Wyer, 1990).

The decision making mechanism and processes within small firms rest on the owner-manager who is often the sole strategic decision maker. Success or failure often hangs

on the decision making ability of the owner-manager. The orientation of the organisational culture in a small firm follows the mind-set of the owner-manager. This cultural trait in the end shapes up the "enabling/constraining forces affecting the firm" (Smallbone and Wyer, 1994; Wyer and Smallbone, 1999) It is this inter-relation between a small firm and its manager's decision making abilities that to a great extent dictates the growth and success of the firm and on this success and failure of the firm hangs the livelihood of the owner-manager. This is a clear distinguishing factor that differentiates a small firm from a large one. Whereas in the latter case the profit return on the stake holder's investment is dependent on the management's decision making capabilities.

For Wyer and Mason (1998) small firms are inherently problematic. They argue that there is potential for problems which evolve out of the very cultural fabric of the firm; that is deriving out of firm-size and owner-manager's beliefs, values, attitudes and abilities. Such factors have great influence on the firm's flexibility, decision making processes, learning processes and the extent to which it is able to adapt to its external environment.

Inherent size-related characteristics aggravate the potential for small businesses to identify and cope with impacting change situations in their operating environment. For example, owner-manager's attitudes and motivations in some small firms may centre on the contumacy of independence and autonomy and thus may be the main source with regard to its resistance to utilisation of external resources and finances. It may be to many small firms that size of operation puts a constraint on its future development. For example, smallness of operation may result in difficulties in raising finance due to its lack of collateral or profit-track-record (Hall, 1989). Its inability to attract quality shop-floor and/or management workforce may be embedded in the small firms' facing of a substandard or marginal labour market (Curran, 1988). Whereas small firm's inability to offer comparable wage/salary, perks or career path opportunities vis-à-vis the large company in turn leads to unique problems related to a work force which has less education, less commitment and less experience. Such inability levels may in turn manifest in difficulties across functional areas of activities; for instance, in a marketing context, the small firm has been found to have difficulty in obtaining market information or in relating to the wider external

operating context (Gibb, 1983). Carson (1991) draws attention to the dichotomy between marketing theory and the world of small business marketing practice. Thus, attempts at better understanding small firm marketing activities and deficiencies may also be currently constrained if investigation is continuing to utilise traditional marketing text book paradigms as interpretative devices to examine the phenomena (Wyer and Barrett, 2002).

3.5 Small Business Strategic Development:

Competitive advantages of SMEs are, for Bamberger (1989), "*positional advantages in a market which a firm develops by the deployment of certain resources*". His study suggests that a SMEs competitive advantage depends on six factors: their competence and image, marketing capabilities, technological capabilities and services, financial capabilities, creativity and product differentiation and low cost and pricing policy. He also argues that the personality of owner-managers and their mental perception about economic, social, aesthetic values and attitudes towards business elements influence the organisational objectives, competencies, market choice and functional strategies of their firms. He further suggests that a firm's operating environment can also influence the owner-manager's characteristics as a changing environment may cause changes in personal values and organisational culture which in turn require re-orientation of a manager's views and beliefs.

With regard to strategic planning processes and competitive advantages, Aram and Cowen (1990) suggest that small firms are sensitive to changes in their competitive environment. To maintain competitive position in such an environment a SME needs strategic planning (Fry and Stoner, 1995). From their study of a number of small firms, Aram and Cowen urge that, with a relatively small increase in effort in improving the strategic planning processes, substantial economic gain is possible through long-term growth and creating competitive advantages.

Wyer (1998), however, argues that the potential of traditional, rational strategic planning for the small business, based on step approaches of strategic analysis, choice and implementation, is debatable. Such analytical planning approaches "should be considered within the context of the assumptions upon which the concept is based.

Moreover, the idiosyncratic management processes relating to small firm owner-manager based characteristics and size differentiates them from their larger well-resourced counterparts”.

Based on the findings of several empirical researchers, Fletcher and Harris (2002) argue that there is no significant relationship between formal strategic planning of a small firm and its financial performance. Arguably, unqualified adoption of formal rational planning models designed essentially for larger firms are unsuitable, inappropriate and harmful to small firms (O’Gorman and Doran, 1999). Traditional rational strategic planning approaches to strategy formulation follow discrete step management processes which have remained unchanged for years. Citing Lindblom (1959) and Quinn (1980), Fletcher and Harris (2002) contend that in uncertain and labile environmental situations such ‘static’ modes of planning processes are unsuitable for effective strategy generation.

Chan and Foster’s (2000) empirical study of strategy formulation in Hong Kong based small firms supports Wyer’s (1998) contention that the small firm strategy building process is a highly contextual and often messy learning process and traditional rational strategy formulation processes do not sit well with the small business environment and the informal and idiosyncratic small business management processes.

Wyer’s 1998 study on the appropriateness for small firms of traditional strategic management tools in an unstable, uncertain and volatile environment emphasises that in such environmental conditions small business management may have to ‘discover’ or learn about unknowable, unpredictable, unstable change situations. This builds out of the foundation work of Stacey (1990, 1993) whose categorisation of closed-contained- and unknowable, unpredictable open ended-change provides emphasis of the inadequacy of rational long term planning modes of management (though not in the context of a specific small business focus). Wyer’s work supports Stacey’s notion that in such open ended change situations firms may learn through conducting experiments and explorations on a continuous ongoing basis and to take necessary measures as the future unfolds. He further suggests that learning to cope with an

unfolding situation and to exploit the situation to its own advantage is a major management issue in such environmental conditions.

Based on Wyer's study of the successes and failures of small Malaysian furniture manufacturing businesses, Wyer and Mason (1998a) assert that in turbulent environmental conditions, where the change situation is unknowable and unpredictable traditional, rational analytical approaches are not applicable. In such conditions the success of a small firm largely depends on its willingness to learn about its changing external environment in an incremental manner. This may be achieved through interface and dialogue with key informants on the boundaries of the firm's activities (such as suppliers, agents etc.). It is often a messy process.

In the same vein Fletcher and Harris (2002) argue that despite these firms' seemingly simplistic organisational and command/control structures, the strategy formulation of a small firm is quite complex, 'subtle', multidimensional and is an emergent process rather than a long-term rational preconceived and formal one (Fletcher and Harris, 2002).

In an unknowable and 'open ended' change situation (Stacey, 1990) such as the unstable and unpredictable environment a small business operates in, the small business can adjust through 'strategic learning' processes (Wyer and Mason, 1998b). Wyer and Mason argue that a small business may learn strategically, to cope with its volatile environment through an iterative process by: (i) picking up and filtering in relevant external signals/stimuli in the form of facts or insight; (ii) converting the facts/insight to firm-specific information then (iii) contextualising the information to the activities of the firm; this culminates in (iv) the build up of a shared strategic framework for considering change activities through dialogue with key-informants and key-staff members and (v) adjustment to the organisational markets, products and/or processes activities; possibly via further learning activities in the form of trial and error or experiment.

From their empirical investigation, Joyce et. al. (1990) suggest that small firms need more information about the developments in their markets as this lack of information acts as a barrier to their growth. Due to inadequacy of marketing information and

experience, SMEs may become prey to the fluctuating market system and vagaries therein.

Wyer and Mason (1998), as emphasised in the previous section, underline how unique problems may evolve out of the very cultural fabric of the small firm owner-manager beliefs, values, attitudes and abilities. Those problems may become the predominant enabling and/or constraining context of success/failure of the small firm development. Such problems can in some cases become deterministic factors and have great influence on the firm's flexibility, decision making processes, learning processes and the extent of its adaptability to its external environment.

Smallbone and Wyer (1994) also argue that in a SME, where the strategic decision making processes predominantly lie in the hands of the owner-manager, the orientation of the organisational culture pivots around the owner-manager. This cultural trait in the end at least in part shapes up the "enabling/constraining forces affecting the firm".

With regard to environment, both large and small firms operate within a dynamic and complex unstable milieu. The larger the firm the more complex its environment becomes. However while most of those environmental variables are common to both small and large firms, Wyer (1990) argues that large firms have the financial and resource capabilities to underpin the requisite management expertise to facilitate scanning of the environment and take necessary actions based on analysis of the gathered data. He portrays this type of management practice as pro-active. Smaller firms lack such management expertise due to their resource poverty. A large firm can thus maintain some sort of equilibrium while small firms are often in unstable situations due to their meagre resource base and ability levels. This lack of environmental scanning expertise and labile situation further inhibits a small firm owner-manager from rationally planning long term which, for many commentators, is essential for the underpinning of growth and survival of any business.

Wyer (1990) proceeds to emphasise that there are other constraining forces operating within a small firm which centre on the owner manager's pivotal role. For example the owner-manager's perceptions of the business environment and his/her mind-set act in

the shaping of the firm's strategic direction and structure. This owner-manager's mind-set manifests in a "personalised management process". This personal type of management, based on owner-manager's personal ambitions and aspirations, are unique to small firms and deviates substantially from large firm management practices.

Gibb (1983) argues that this unique small firm personal management type does, however, gradually dilute as the firm grows larger and further management layers are created between the owner-manager and the workforce. Martin (1989) also observes that top-management's direct involvement with a firm's day-to-day management of its routine activities blurs with the growth of the firm and its workforce.

What is clear, however, is that the personal characteristics of the owner also have a strong influence on the decision making process (Gore et.al., 1992). Often a paucity of personal management experience can result in the owner-manager becoming steeped in day-to-day activities and find it extremely difficult to step back and look at the "big strategic development picture" or values and attitudes manifesting in preferences for independence and autonomy can result in a reluctance to delegate operational decision making (Ket de Vries, 1997).

Moreover, what is equally clear is that the strategic management literature substantially fails to ground management knowledge-bases in understanding of the distinctive management and organisational features and behaviour of the small business (Wyer and Smallbone, 1999). Mintzberg et.al (1998) bring attention to the need for integration of diverse schools of strategic management thought including the positioning school (for example Porter, 1980) and the entrepreneurial school (for example Hamel and Prahalad, 1989). While Mintzberg's call for integrative action is highly commendable, it too fails to consider or address the behavioural and developmental features of the small business. Such strategic management knowledge base must therefore be selectively used in any approach to examining small firm strategy development processes.

3.6 The Electronics Industry in the Hertfordshire Region: contextualising the small business focus of the study

Hertfordshire has one of the highest concentrations of high technology electronic firms in the UK (AMR 8, 1987). There is a natural inclination in some regions to specialise in one kind of activity or another due to reasons defined as 'factor conditions' (Porter, 1990). Malecki (1991) found that social and occupational influences appear to be most significant in reinforcing this spatial contrast. It was also observed that a local organisational entrepreneurial culture helps the growth of a strong small firm sector (Delbecq and Weiss, 1988; Illeris, 1986; Martinez and Nueño, 1988; Sweeney, 1985). Successful small firms drive on other small firms to take risks and pursue opportunities (Buss and Vaughan, 1987). Hertfordshire saw the immigration of a range of medium to light industries from London during the early 20th Century. One of the companies was De-Haviland Aircraft Company in 1934. Which during and after the World War Two burgeoned to a major defence equipment manufacturer later known as British Aerospace Plc. With the increasing investment in the defence sector and increasing applications of electronics within defence equipment, British Aerospace became one of the largest producers of electronic equipment (Lovering, 1987). As high technology electronics needs specialised skilled personnel, other companies moving into the electronics business and those who are already in it moved into this region for supply of skilled personnel due to 'locational inertia' (Simon, 1987). Being in an area where other similar organizations are located, an organisation has an added advantage of recruiting and keeping their employees with relatively less effort. Some of those companies were directly related to larger defence organisations while others were commercial electronic equipment manufacturers such as British Tabulating Co., later to become ICL. There was also a third kind of organizations who were engaged in both the defence as well as civil related activities.

High technology companies have some particular characteristics which make them different from other organisations. Those special characteristics lead them to form a different organisational culture. Thus, the local council was encouraged to develop a specialised infrastructure in support of high technology enterprises and educational

institutions. As a result, the Hatfield Polytechnic was established initially to train the personnel for British Aerospace

There were also spin-off small high-technology electronics companies, founded by ex-employees of defence organisations, mainly to act as sub-contractors to those defence organisations encouraged by the economic stability and by the ever growing demand of the defence sector. They were able to grow under a stable environment created by the then protected defence industry (Sen, 1995).

Thus, Hertford became a regional enclave for a cluster of high technology electronics companies, developed over decades following the end of World War Two. Those organisations were nurtured and nourished within a defence-related environment. However, changes took place within Hertfordshire's industrial milieu and in its economy due to fundamental re-structuring of the UK defence policy, as announced in Options for Change in July, 1990, (Cm 1559-1, 1992). Under "Options for Change" defence expenditure continued to fall both in real terms and as a share of national output. Those changes were accelerated by the recession of the early 1990s (Hartley, 1993). Hartley highlights that Hertfordshire's economic structure was changing inexorably. The combination of cuts in defence expenditure, worldwide recession, change of the world political scenario, the reality of stiff competition due to the Single European Market (SEM), deregulation of trading activities and new innovations in technology and communications acted together to manifest in overall impacting change forces necessitating restructuring and conversion processes for readjustment to such a changing environment.

Malecki (1991) suggests that a close relationship between entrepreneurship and technological innovation is important to the success of the high technology sector. "The most important conditions for 'home grown' high technology development are the technological infrastructure and entrepreneurial network that encourage the creation of indigenous high technology firms and support their survival" (Office of Technology Assessment, 1984:7). It is evident that Hertfordshire has all of those essential ingredients to accept the challenge offered by the changing environment.

Thus, being a high technology base region, Hertfordshire is at an important stage in its history at present. Because of the changes occurring within the national and international arena Hertfordshire is an ideal region for focus of investigation into ways the electronic industry may cope with a changing milieu where her industrial culture is shifting from a defence to a civil orientation.

Chapter Four

*Bootstrapping The
ISH/Internet
Technology Literature*

CHAPTER FOUR

BOOTSTRAPPING THE ISH/INTERNET TECHNOLOGY LITERATURE

4.0 Impact of the ISH/Internet Technology on an organisation:

4.1 The Internet: Definition

Various researchers define the Internet from their own standpoint and perceptions. Some define it as a communication medium which allows disparate computers to communicate with each other (Levitt, 1995). While another group's perception is as a communicating media facilitating various activities from information retrieval to virtual shopping to cyber mall (Dutta and Segev, 1999). Yet others see it as a media to interact with another group with the same interest and/or activities (Levitt, 1995). Due to the nature of the fast development of Internet technology, it could be described as an evolutionary process (Vadapalli and Ramamurthy, 1998). ISH/Internet technology can be defined as a digital communication standard constituting a computer mediated information infrastructure (Poon and Swatman, 1995) which enables and maintains interconnectivity of computers over telecommunication networks in order to transmit/receive/exchange digitally formatted audio-visual and text data/information at an incredibly fast speed and accuracy.

Molner and Sharda (1996) see the Internet as a worldwide entity bridging local, regional and international telecommunication networks. For Pawar and Sharda (1997) the Internet can be seen as a set of interconnected networks with several million computers connected to these networks.

Effectively the Internet is today's information superhighway. Although the ideal information superhighway should be faster and contain the features of all sorts of communication links from telephone to satellite links and transfer of digitised video images, the technology is yet to come (Anderson, 1995).

In the context of this present investigation it is pragmatic to accept the Internet as “an information infrastructure ”.

4.2 Internet Characteristics

The Internet possesses key properties which are inherent to its characteristics: (i) flexibility: compatible to all existing computing systems (ii) non-regulation: absence of any central regulating body (iii) open systems structure and (iv) accessibility: instant global accessibility (Levitt,1995; Cockburn and Wilson,1996).

- The Internet could be accessed by any of today’s computer systems such as IBM, MAC or main frame.
- There exists no central regulatory body to impose restrictions on or to control its use. This in another way is also a disadvantage. Unlike the EDI technology, where the dominant ‘hub’ organisation controls the whole networked community, the Internet/Multimedia system is controlled by none. In this respect it can be considered as a neutral and transparent communicating media where anybody could be connected to anybody at will.
- As an open system it could be accessed by any one any time from anywhere using proper equipment.
- Due to its global networked structure it could be accessed instantly through the available telecommunication network.

4.3 Strengths of the Internet

The advantages the Internet offers relate to its unique characteristics such as its compatibility with all existing computer systems, instant accessibility negligible maintenance cost and, interconnectivity (Dutta and Segev,1996):

- (a) Due to its compatibility with existing computer systems there will be no financial incumbent in its installation and maintenance. An operating situation thus exists where anybody/any organisation is able to use it with their existing computing

equipment and telephone network. There may even be no dedicated software required.

- (b) The Internet is accessible all the year round at any time of the day.
- (c) The Internet is free to use apart from a small fee to be paid to an Internet Service Provider (ISP) in order to gain access to the Internet to transmit and receive audio-visual data and information. The overall communication cost is negligible compared to other means of communications. This low cost and openness are the major factors inputting into the success of multimedia information systems.
- (d) Due to the real-time on-line nature of the Internet a rich interactive relationship between sellers and buyers is a reality with the Internet, opening new paradigms of customer product design to one-to-one customer services.

4.4 Drawbacks of Internet Usage

The major drawbacks of the Internet are its vast information resource and, the fact that no one is in charge of the system. A combination of these two factors can lead to difficulties in locating the requisite information. As the Internet has no controlling infrastructure to effect control and supervision of the activities of its users, no guarantee exists as to the confidentiality and privacy of the transmitted data and information. This lack of security also hinders its use as a media for monetary transactions (Cockburn and Wilson, 1996; Levitt, 1995). Angehrn (1997a) emphasises the reluctance of the banking sector in accepting the Internet as a fully blown business media because of these security issues.

Ahrens and Esquer (1993) suggest that retrieving information on the Internet is time consuming and 'labour-intensive'. Special training is also needed in this regard (in Molnar and Sharda ,1996).

Motiwalla (1995), on the other hand, argues that some organisations were overwhelmed with useless junk information in the form of e-mail. Dealing with this is a real problem which in turn evokes a negative attitude towards the internet (in Molnar and Sharda; *ibid*).

In the context of the SME sector, the Directorate of Science, Technology and Industries (1998) identifies a number of constraining factors acting as barriers and obstacles in using the Internet as a business media. These include:

(a) lack of awareness of e-commerce (b) uncertainty about benefits it offers (c) security (d) lack of suitable products and integrated systems for using the Internet (e) complexity and cost of e-commerce with regard to the banking system (f) lack of knowledge (g) lack of a strong legal base (g) lack of resources (h) concerns about set-up costs and (i) its embryonic development stage.

4.5 Potential Impact of the Internet on Organisational Activities:

One of the advantages of ISH/Internet technology is its power of interconnectivity. Interconnectivity points to two features of communication. Firstly, the communicating media's ability to contact the addressed person or organisation and, secondly its ability to maintain the exchange of ideas and dialogue between the two parties depending on their responses (Deighton, 1996).

Dandridge and Levenburg (2000) portray the Internet as an interactive media for two-way communication and enabling an organisation to '*gather information as well as disseminate it*'. Implicit here, is developmental potential for organisations, both within a context of operational and strategic level activities.

The Internet's possible impact extends to the traditional market space through its mode of intervention with the market and transaction agents. Those interactions are in four distinct virtual spaces: Information, Communication, Distribution and Transaction spaces (Angehrn, 1997). It can be a new channel displaying itself or accessing another firm for its product or services (an information channel); It could be a new channel to establish inter-organisational relationships in order to exchange ideas or opinions, for commercial purposes (a communication channel); or a channel to distribute intangible goods/services such as software/support etc. (a distribution channel) or, for the execution of business transactions such as order, invoice and payment (a transactions channel).

The Internet also offers the possibility of creating a virtual value chain. The links of this value chain will have forms like electrical hierarchies, electronic market, networked organisations for strategic alliances and so on. Those new forms are indicative of an ongoing process of re-configuration of value chains due to continuous technological change (Benjamin and Wigand, 1995).

Ghosh (1998) emphasises that the Internet is “*fast becoming an important channel for commerce in a range of businesses*”. Its ability to link anybody to anybody at anytime allows it to establish interactive communication links between suppliers and customers. For him, the Internet offers four distinct opportunities to an organisation: (i) the opportunity to establish a direct link to the target customers to supply product/service information; (ii) to bypass links in the value-chain, thus reducing the price; (iii) the possibility of developing new product/services and, attracting new customers and, (iv) to become a dominant player within a specific industry and ability to create barriers to entry through providing the same level of service at a lower cost, gaining customer loyalty through personalising and, through providing new inexpensive services through interacting.

It is envisaged that the impact of a multimedia system on an organisation will be on many fronts. It will change the internal work practices through introducing new ways of working with computers thus replacing pen, paper and filing concepts. While improved and instantaneous audio-visual intra- and inter-organisational communications will replace the concept of an organisation's physical boundary with a virtual one. This will therefore lead to a radical organisational re-structuring process to effect 'fit' within this changing environment (Dastur and Angelides, 1997).

The ISH technology is an epoch making idea, which is transforming our way of doing business. It will alter fundamentally the way organisations work today. Conducting business on the Internet, as e-Commerce, will blur the boundaries between businesses through joining value chains in different industries. In the long run it will be the value chain instead of companies which will compete with each other. As change accelerates “companies will find that they need an unusual blend of skills and experience if they are to succeed” (King and Clift, 1999).

In the context of market and marketing activities, Bakos (1998) highlights that markets play a pivotal role in any country's economy through three main functions (a) matching buyers and sellers; (b) facilitating exchange of goods/services, information and financial transactions and, provision of (c) an institutional infrastructure such as legal and regulatory frameworks.

For Hoffman and Novak (1996), the profession of marketing, like any other profession, is determined by the tools it has at its disposal. When the tools are changed the discipline needs to adjust to this new environment. Deighton (1996) expresses that the existing conventional marketing tool kit based on the 4Ps (Product, Price, Place and Promotion) model (Kotler, 1994) will have to be changed in the face of evolving Internet based e-Commerce. In the face of an electronic interactive marketing concept the traditional distinction between strategy and organisational structure to implement the strategy will need to be modified. *"..in practical terms it means thinking about strategy and organisation as integral parts of a business design that is capable of responding to the customer's ever changing definition of value of the product or service offered"* (Deighton, 1996).

In the context of the Internet's influence on business activities Dandridge and Levenburg (2000) argue that the Internet is changing and reshaping the traditional 4P (Product, Price, Place and Promotion) concept of marketing through fundamentally adjusting the processes of product design, product pricing, distribution and promotional techniques.

In defining the role and influence of the Internet in the marketing sector Quelch and Klein (1996) address various factors which influence the marketing strategies of an organisation. They argue that the Internet will connect users with the process directly, thus reducing the importance of intermediate links within the value chain. It will reduce the importance of economies of scale and in turn lower the entry barrier manifesting in providing opportunities for smaller firms. For Rennie (1993), cheaper communication costs will see *"small companies offering specialised niche products and should be able to find the critical mass of customers necessary to succeed through the worldwide reach of the Internet"*.

Armstrong and Hagel (1996) see the electronic marketing concept from another perspective. They point out that conventional marketing strategy is based on the product/service a firm offers and its own customer base, but that with the advent of the Internet technology the electronic communities emerge and marketers will need to target cross community customers with electronic marketing gradually transforming into a direct selling concept.

For Hoffman and Novak (1996), the traditional one-to-many marketing communication concept (Laswell,1948; Katz and Lazerfield,1955) will have limited utility in the face of an emerging Internet-based many-to-many marketing process. The Internet's novel many-to-many connectability will shift the marketing communication concept from a one-to-many to many-to-many paradigm (ibid).

The Internet based businesses are having a major impact on traditional marketing activities (Bailey and Bakos, 1997; Riggins, 1998). For Bakos (1998): (i) increased personalisation and customisation of product offerings and (ii) aggregation/dis-aggregation of information-based product components in matching customer needs and pricing policies, are two major factors which distinguish the web-based marketing paradigm from the traditional marketing theme.

This new marketing paradigm will provide customers with greater controlling power over information search and acquisition, pertinent to their decision making processes. Thus elating their position from a passive receiver to active participants in the marketing process (Hoffman and Novak, 1996).

For Bloch et.al. (1996), to build an e-commerce system an organisation needs a strategy encompassing a vision, a rational business value and a clear plan to reach the goal (Bloch et. al., 1996). Such a *"strategy should include an understanding of the impact of electronic-commerce on an industry structure, the potential for new business models and opportunities for competitive advantage"*.

In the context of strategy planning, Pawar and Sarda (1997) argue that the Internet would be an effective strategic information gathering tool for underpinning an organisation's success in an uncertain business environment. They emphasise how a

firm needs to acquire information from external signals produced by environmental agents such as the economy, evolving technology, market and competitors in order to take effective strategic decisions in an appropriate timeframe.

Cronin et. al. (1994) support the view that the Internet has the potential for becoming a strategic information tool for commercial enterprises. Based on a survey of Internet practices, they observe that the participants are using the Internet to support corporate intelligence functions in organisations, in consumer contacts as a prospecting source of new clients, as means of customer communication and in market research and in indirect advertising.

On the other hand, with the increase in application of Internet technology in the commercial domain an increase in competition between large and small firms is rising. Yoffie and Cusumano (1998) suggest that the traditional concept of competition will be replaced by an entirely new approach in gaining competitive advantage. A new concept of competition will be based on three cornerstones: (i) rapid movement: ability to move rapidly to uncontested ground in order to avoid head on conflict. i.e. to gain competitive advantage through introducing new product/services and new pricing models; (ii) flexibility: ability to be flexible enough to give way when attacked directly by a superior competitor i.e. use of flexibility and strategic adjustments through long-term strategic plans and, (iii) leverage: ability to utilise the strength of the competitors i.e. turn competitor's strategic commitments and investments to one's advantage.

Dutta and Segev's (1999) longitudinal study, on business transformation of Fortune 500 firms, however, provides some remarkable insight into attitudes and views of large organisations towards the Internet usage for business purposes. They proceed to highlight large corporate firms' reluctance to exploit the benefits of Internet based commerce due to their cultural paradigm: those *"firms are hostages to the legacy of their own successes"*. It has become very difficult for managers of such firms to venture in the new territory of e-business due to their past traditional successes.

The Internet is still in its evolutionary stages and in uncharted territory (Dutta, 2000). To be successful in this unknown and changing region he suggests that organisations

need the following attributes: (a) clear leadership from top management in terms of encouragement and drive from senior managers to exploit this new technology; (b) strategy on the edge: continuous updating of strategic thinking and planning to keep pace with fast and uncontrolled environmental changes; (c) technology integration and real-time organisation: collaboration and integration between functional departments in order to react, in real-time, to strategic changes; (d) value creation through networking: to recognise and to utilise the latent value of networking processes; (e) customer-driven focus: customer focused marketing strategy with one-to-one or personalised approach; (f) willingness to experiment and fail: to experiment with the Internet in order to learn; and, finally, (g) top talent: to hire people who are intrinsically motivated to work within a rapidly changing environment and optimistic about success

4.6 SMEs and the Internet:

Insight into the characteristics of the Internet as discussed above appears to suggest that it can offer a cost-effective and instantly available computer mediated information interchange media to small and large organisations alike as an information superhighway. The Internet can provide an opportunity for small firms to access the rich source of external information that was once only accessible to the larger resource-rich corporations. It is suggested by many commentators that with the availability of the Internet small firms may be able to compete with the larger firms on equal footing due to their accessibility of the external economic agents (see for example, Craig and Poon, 1999).

On the other hand, the prime objective of an organisation is to create competitive advantage in order to secure a position in the market and to maintain its market position within its own industrial sector. SMEs are no exception in this context.

Dandridge and Levenburg (2000) argue that for small businesses *'the Internet represents an opportunity to cost effectively reach new markets and compete with much larger competitors, primarily because the cost associated with establishing an Internet presence is relatively low'*. It is further argued that with the evolution of cost effective, low volume logistics and distribution of physical products (Thompson,

1998) the Internet has made it possible for small firms to reach world-wide niche markets and enable them to cater for those markets with their low volume produce.

For some commentators prescription regarding ideal behaviour of small firms flows freely. For example, to be successful in today's unstable and rapidly changing environment a SME should:

- (i) Be able to create a niche market.
- (ii) Be able to use Information Technology effectively.
- (iii) Be able to create strong domestic and global partnership and networking.
- (iv) Try to enter into the global market.

(Certified Accountant, 1994)

Whilst a commendable ideal toward which all smaller businesses should strive, such prescription fails to recognise the idiosyncrasies and problem types revealed in the above review within chapter 3.

The Internet, as a member of the information technology family, may well enable a small firm to gain access to, and to interact with, more external economic agents. It will also act as a tool for retrieving and sharing information on a worldwide basis (Lymer et al, 1997).

The extent to which the above becomes reality must, however, rest upon willingness, abilities and motivations of small business owner-managers or management teams. And it is the distinguishing organisational and behavioural features of the small business as discussed in the previous chapter which must provide the context for determining factors for understanding of the likely impact on small businesses.

4.7 Impact of the Internet on SMEs:

Although the uses of the Internet may in many respects appear quite simple, its impact on SMEs may be far reaching. Lymer et.al. (1997) suggest that the Internet's impact on the SME sector will be at four levels:

- (i) contacts with the environmental agents.
- (ii) at industrial levels.
- (iii) on organisational level.

and, (iv) processes and tasks carried out within an organisation.

Changes at the organisational level relate to: increased productivity; increased communication; easier information retrieval i.e. environmental scanning abilities; the build up of knowledge base and, environmental insight.

Lymer et.al.'s (1997) empirical study on the impact of the Internet on SMEs reveals that there is significant impact on the organisation's business contacts. They also emphasise that at the organisational level the impact has been low for firms who have previous experience of using Information technology.

A key unfolding thread through this study's literature review in its totality is that of organisational learning. The Wyer and Mason (1998) conceptualisation of the small business strategic learning process places great emphasis on the complex learning task of converting base facts/insight (crude information) to small business specific information and to then transform this into understanding and ultimate change in strategic behaviour and activities of the firm.

Thus, it will not be enough for small businesses to utilise the Internet and ICT to merely unfold information. Sustained competitive advantage will require individual and organisational learning.

4.8 Adoption of the Internet:

The need to integrate Information Technology within organisational activities to exploit its potential in full is well researched and well documented (for example, Raymond, 1985; Delone, 1988; Lees and Lees, 1987; Montazemi, 1988; Yap et. al., 1992; Cragg, P. and King, M, 1993; Chen and Williams, 1993 and 1998; Zinatelli, Cragg and Cavaye, 1996; Naylor and Williams, 1994; Igbaria, Zinatelli, Cragg and Cavaye, 1997).

The above researchers contend that organisational characteristics, resources and in the main owner-manager/CEO support, are the key factors behind the successful integration of IT within a small firm. In the case of the Internet the main motivational factor for its successful use has been, at least to some extent, the action and encouragement of the top manager as the main driving force (Poon and Swatman, 1997a).

With regard to the adoption of new technology by manufacturing SMEs Raymond et. al (1996) argue that there are four factors that influence a SME to adopt a new technology: (i) strategic advantage (ii) technological expertise (iii) decision process and, (iv) organisational capabilities. They observed that socio-economic pressure is the main determinant in adopting a new technology. However, technological competencies and organisational culture play important roles in this strategy change process.

Daniel et. al. (2002) observe that although the SME sector within the UK is adopting the Internet as a development vehicle, manufacturing SMEs are lagging behind their service counterparts in utilising the Internet for commercial purposes.

In this context, Chaston et al. (2001) argue that most UK manufacturing firms are yet to understand the critical importance of the Internet as a business tool. This, they suggest, is because these firms are still in a single loop mode of learning process due to lack of experience and understanding of the Internet's potential for delivering their future market strategy. Wyer and Barrett (2002) would claim that the real issue here is one of small business owner manager/manager ability to double-loop learn - Internet as a learning tool, or no internet as a learning tool.

The Internet is seen by small firms in various ways. Some see it as a communicating media, effectively as an alternative to a fax (Poon and Swatman, 1997b). Others use it as an advertising channel where they 'paste' their product details and await things to happen (Angehrn, 1997a). This is indicative of the lack of comprehensive knowledge with regard to conducting business electronically, its adoption and the interplay between the barriers to its adoption and the key structural factors, such as size, industrial sector and regional location, specific to the SMEs (DSTI Report, 1998)

Such behaviour with regard to small firm use of the Internet and thus absorbing the technology may be explained, at least in part, by the theory of absorptive capacity (Cohen and Levinthal, 1990). For Cohen and Levinthal the absorptive capacity of a firm is its ability to recognise the value of external information, its ability to absorb it within its culture and finally to apply it to gain commercial advantage. They emphasise that success of this circular process depends on the person(s) positioned between the firm and the outside environment in terms of: the perception, mind-set, experience and way of seeing the environment.

This in part explains the disillusionment of small firms with regard to the Internet's inability to deliver the commercial success to their expected level of satisfaction (Poon and Swatman, 1997b; Barker et.al, 1997 and Angehrn,1997a). Small firms were only able to see the Internet as a physical tool and attempt to use it as a conventional marketing, communication and adverting media (Levitt, 1995). They overlooked the main potential of the Internet in terms of interactivity ability with regard to gathering and upgrading of information from various external economic and environmental agents and its upgrading interactively and in a continuous manner (Levitt, 1995; Logan and Logan, 1996).

4.9 Creating Competitive Advantage with the Internet:

Porter and Miller (1985) assert that each and every product/service consists partly or wholly of information. With the help of information technology competitive advantage could be created by manipulating the links in the value chain activities of a product/service. By adding or removing links within that chain it is possible to gain competitive edge over competitors. It is possible to create competitive advantage by by-passing value chain links, and decreasing value activities, thus reducing costs. Adopting of insight from Poon and Swatman (1996) allows for the suggestion that steps such as the following can help to explain how competitive advantages could be created through aligning SMEs' business processes with the use of the Internet:

- (i) Assess information intensity by concentrating on the potentially high information content in the product/service.

- (ii) Determine the role of the Internet in the industry structure by predicting the impact of using the Internet in terms of likely changes in the industry structure and organisational boundaries.
- (iii) Identify and rank the ways in which the Internet might create competitive advantages by reducing cost, improving knowledge exchange and enhancing links between value activities and between organisations.
- (iv) Investigate how the Internet helps spawning new businesses. Determine how the Internet may provide new and emerging business possibilities.
- (v) Develop a plan to take advantage of the Internet through creating an infrastructure to bring necessary change within the organisational structure and strategies in order to integrate the Internet as a business tool.

Levitt (1995) suggests that for the small business the Internet offers many types of business uses which if effectively utilised can help competitive advantage. For Barker (1994) and Fuller and Jenkins (1995) these possibilities are:

- (i) To locate customers through scanning of newsgroups and by advertising.
- (ii) A doorway to new ideas and new opportunities.
- (iii) A scanning media for marketing, selling and competitor intelligence.
- (iv) A low cost communication media for general accessibility.
- (v) Reach medium for customer feedback, customer support and supplier contact.
- (vi) A media for environmental scanning necessary to maintain comparative edge.

Although the Internet offers such opportunities it by no means follows that small firms automatically become more competitive just by connecting to the Internet. Such activity requires learning and a considerable shift in mindset which in turn requires time and resources, both of which small businesses are in short supply of (Poon and Swatman, 1995). Moreover, doing business on the internet requires different business

skills and strategy approaches which differ from conventional business skills and marketing strategies (Poon and Swatman, 1997a).

Booz-Allen and Hamilton (1997) portray four different ways in which SMEs could use the Internet: (i) substitution for conventional traditional forms of communication; (ii) accessing information; (iii) new ways of conducting of businesses internally and, (iv) new ways of conducting business with external economic agents.

However, they emphasise that success of such applications depends on the proper integration of this new way of doing business with activities of the organisation as a whole. They further suggest that success depends mainly upon adaptation to new business environmental conditions where a large part of business activities is conducted electronically and which requires the firm to be rapidly assimilated to a networked value-added structure.

4.10 Strategic Business Use:

Welsh and Cummings (1993) identify key business drivers for 1990s SMEs with the Internet used successfully as a strategic tool (in Poon and Jeovns, 1997): These drivers are:

- (i) Increased global competition.
- (ii) Increased competition for capital
- (iii) Increased consumer demand for quality in products/services.
- (iv) Increased partnership between Small/ Medium/Large organisations
- (v) Rapidly changing market environment
- (vi) Growing need for immediate access to business information from various sources
- (vii) Increasing need to keep track of Governmental legislation
- (viii) Need to stay flexible

The extent to which those business drivers have been elucidated with due consideration of the idiosyncrasies and informalities of small business management processes is however questionable.

4.11 Organisational Structure and Strategies of SMEs and the Internet:

For some commentators it is the organisational structure that follows strategy (Johnson and Scholes, 1993). Moreover, some academics suggest that small firms do not have a clearly defined business strategy (Ballantine et. al., 1998). This feature could be due to their weak financial resources leading to their inability to: (i) influence the market price through product/services output (ii) create barriers of entry (iii) raise prices (iv) their small market shares (v) dependency on a small number of customers (Storey and Cressy, 1995) and, (vi) their idiosyncratic management style (Wyer, 1998; Wyer and Mason, 1998). Small firms are thus often in a precarious position and operate within a hostile, competitive uncertain and labile environment (Storey and Cressy, 1995).

A small firm with its operating uncertainty, financial limitations and idiosyncratic management processes operates within an unstable environment. The business strategy it follows is mostly dictated by the owner-manager(s)/CEO. Often it is centralised and autocratic (Wyer, 1998). This type of management style is defined as "defender" type (Miles and Snow 1978) whereby organisational strategy pursued by organisations involves (i) following a centralised decision making management style and, (ii) focuses towards cost-saving and efficiency. The organisational culture is based on centralised control and low prices of products and services.

With regard to the organisational structure of small firms it is often "simple". In most cases the owner-manager/CEO is sitting at the "strategic apex" with the "operating core" below him, and in some cases, with a single layer of management in between (Mintzberg and Quinn 1996). It is thus the owner-manager's views, aspirations, experiences and personal ambitions which are the driving force behind the success of a small firm.

In unstable and hostile environmental conditions a small firm needs to take up an entrepreneurial strategic posture (Wyer and Mason, 1998) in terms of "concern for maintaining an awareness of industry trends" and at the same time its organisational structural attributes must be organic or flexible to maintain its competitive posture. The awareness for respective industries and change therein could be achieved through maintaining some sort of environmental scanning mechanism (Covin and Slevin,

1989). On the other hand, as the uncertainty in an environment increases an organisation needs to gather, process and communicate a greater amount of data/information in order to understand the way the changes are occurring in its external environment to facilitate "re-orientation" (Covin and Slevin, 1989) of its competitive posture to maintain its market position (Moreton, 1995). In the context of a new market venture "the key to the success in entering new markets is to systematically gather and analyse accurate and timely information. Intelligent decisions cannot be made until you are able to find, collect and evaluate relevant information about the idiosyncrasies of the market, the needs and tastes of customers etc." (DTi, 1993). Cash and Konsynski (1985) highlight the importance of information and information gathering for maintaining commercial advantages through value chain lead in the face of rising environmental instability which can result from deregulation, globalisation and increased competition. In such unstable and unpredictable environmental conditions it is not possible, as discussed above, to rationally plan ahead in a long term sense as in a constantly changing environment the conventional strategic tools are often inadequate (Wyer, 1998). In such cases a small firm may need to learn in an incremental fashion. The success or failure of a small firm may largely depend on its willingness and ability to learn from environmental economic agents (Wyer and Mason, 1998). This is only possible through creating a learning cycle of learning activities involving monitoring/scanning the environmental change agents, feeding the information internally and using it as a catalyst for change and implementing appropriate internal adjustments to cope with the environmental change. In other words, evolve an 'appreciation' of the 'state of the system' on an ongoing basis (Vickers, 1963). Lybert (1998) highlights in the case of successful small firms in labile environmental conditions the importance of and the ability to scan, gather and utilise information to create competitive market posture.

Within such an environmental situation the Internet could be used as a conduit not only for picking up data/information and environmental signals (Pawar and Sharda, 1997) to underpin the organisational learning process, but also for maintaining an interactive-communicating media to contribute to the learning cycle.

Poon and Swatman (1997b and 1998), Barker et. al. (1997) and Angehrn (1997b) were unable to discover any significant change in SMEs organisational strategy and

structure in small firms they studied, as those firms failed to visualise the potential of the Internet and consequently to utilise the Internet from this potential strategic perspective.

It may be that an effective conceptualisation of the concept of 'strategy' is a prerequisite to understanding small business strategy development and the role, or potential role, of information technology therein: instead of subscribing to the views that 'small firms do not have a clearly defined business strategy' (Ballantine et. al., 1998, discussed above), it is appropriate to accept that small business strategy may not be in the form of an intended pre-determined development path, but rather is an emergent, unfolding set of change activities. Thus on occasions, at least, strategy may be best conceptualised as retrospective description of a change to a small firm's markets, products and/or processes activities which have emerged over time. Such a conceptualisation puts emphasis on potential use of IT in helping small firms to learn and emerge pieces of strategic change to their markets, products and processes activities, not as a tool to establish a pre-determined long-term future development path.

Moreover, a further key issue therefore underpins the potential of the Internet to effectively input into and facilitate small business learning about its external operating context and is still to receive adequate attention: that is, whether the communication of insight, fact and information from external key informants can elicit the crucial 'tacit knowledge' which these key informants 'hold back' when they convey insight and information over the internet (see for example Swan et. al., 1999). Thus at issue is the extent to which, and how, the Internet can enhance small business learning in a strategic development context.

4.12 The Internet as a Unique Technological Innovation:

The picture of the Internet emerging from the literature review is a unique one.

Whilst the Internet is synthesising functions of telephone, fax, and land, sea and satellite communications with computer technology, defining the Internet as a technology is just, and yet not complete. To complete the picture this technology

should be judged from two completely disparate perspectives. One is technological the other is social.

The traditional view is that an innovation becomes an innovation, whether it is technological, a product, a service or a process, when it is invented by an individual or a group utilising an extant knowledge base. Consequently, the innovator(s) owns the right of his /her innovation and leverages that right towards financial gain or otherwise.

In this context, the Internet is unique in that no particular individual or group(s) possesses the ownership of this technology whereas all are users or participants in this computer mediated communication infrastructure. It is accessible on equal footing by any individual or group irrespective of size or resources. Having no owner, or in the absence of a central controlling authority, the uses of the internet are free to evolve innovatively in the hands of its users to their choice of applications and requirements which, in turn, change the direction and transformation of the technology itself. For Angehrn (1997), the Internet is showing all the attributes of a 'technological innovation' where a technological innovation goes through two distinct phases of evolution: firstly, a 'goldrush' initial penetration phase that is an initial period of much confusion and without any clear strategy; followed by a 'mature' second phase where organisations try to crystallise a plan to exploit the new technology for financial gain. According to him there are indications that the Internet is gradually entering this second phase of evolution.

This parallels Fried and Molner's (1978) social morphogenesis, where new social forms emerge through interactions between interrelated social constructs or components. This interrelated cumulative evolution of the 'used' and the 'user(s)' into new forms from use of a technology was previously unheard of. Within the context of the Internet, Vadapalli and Ramamurti (1998) define this evolutionary process as technological morphogenesis in parlance with an organic morphogenesis which is defined as an evolutionary development process of an organic structure or of an organism mutating to a new form. From the sociological perspective, the Internet brings the prospect of social morphogenesis through creating a new social order replacing older social values and beliefs by bringing closer various groups and/or

individuals and thus avoiding the spatio-temporal divide (Though it can be argued that utilisation of the Internet can bring about social isolation for individuals where day-to-day human interface is lost).

In the context of business, commerce and organisations this new social order takes the form of freedom in accessing, exchanging and disseminating information on the part of both the consumer and the producer. As already discussed, where this results in an evolution of a new marketing concept based on information shifting the locus of market controlling power from producers to the consumers by replacing the traditional marketing paradigm of 'one to many' with a new paradigm of 'many to many'. In this new information oriented social order organisational boundaries turn out to be meaningless. This new marketing paradigm, in turn, brings with it the reorganisation of organisation value chains dissolving the barrier between organisational back- and front offices.

Thus, the emerging picture of the Internet is of a technological innovation that is novel in nature in that it brings to the fore of its users the prospect of myriads of application possibilities waiting to be 'innovated', while the novelty lies in its transformation to new forms along with the applicants and the applications.

Chapter Five

*Making Explicit the
Partial Guiding Frames
of Insight Embedded in
the literature*

CHAPTER FIVE

MAKING EXPLICIT THE PARTIAL GUIDING FRAMES OF INSIGHT EMBEDDED IN THE LITERATURE

5.0 Introduction

The aim of this section is to provide a logical picture of insight built out of examination of extant literature relating to small business development processes and practices and, levels of understanding of the Internet technology, its potential role as a business development tool and in this context its contribution to SME organisational development. This in turn provides the context in the form of partial guiding frames of insight for raising appropriate research issues and questions which forms the foundation of this study, effectively a logical pathway from the extant literature to the research questions upon which the study will focus. Where necessary indicative references are included for emphasis.

5.1.0 The Small Business Literature:

5.1.1 *Definition:* The starting point within the literature review was the definition of 'small business' and SMEs for the purpose of this study. It is clear within the literature that a multitude of definitions have been allocated to define a small business from all of its possible perspectives. For example, for the Bolton Committee (1971) a variety of 'employee' parameters were allocated to define manufacturing, service sector, transport and other businesses.

A clear concluding theme is that small business definition must be viewed within the context of purpose and objective that a size related definition has been formulated for. For the purpose of this study focus will be determined through the study parameters offered by the most recent European Union classification: Micro businesses having

less than 10 employees; small businesses with 10-49 employees and, medium size firms with 50-250 (EU, 1997).

5.1.2 *Small Business contribution to national economic development:* It is clear from the literature that micro, small and medium sized enterprises within manufacturing and services sectors make significant contribution to national economic development. Such contribution manifests, for example, in job creation, creation of a novel enterprise culture leading to sources of new areas of creativity and innovation and, a real role of support provider to larger companies.

Such contribution has long been recognised by governments (often from underpinnings of possible 'political gain' which politicians feel can be derived from supporting small firms). A significant resource has been allocated during and since the Thatcherite years, which has manifested in numerous planks of support programmes aimed at authorising and kick starting the small business sectors of industries.

5.1.3 *Potential benefits of smallness of operation:* Small business literature reflects a (justified) standpoint that advantages of smallness place such firms in beneficial operating positions through exploitation of their vantage positions due to their flexibility and fast responsiveness. The inherent characteristics of their closeness to customers and the void in bureaucracy, as associated with hierarchical large companies, are argued as key issues for a fast response of small firms to the market demand (see for example Chisnall, 1989). Moreover, the recent advancement in Information Technology appears to offer major possibilities in enhancing potential relating to 'smallness' advantages.

5.1.4 *An existing limited understanding of the idiosyncrasies and informalities of small businesses:* And yet a more important theme runs through areas of the small business literature which must be considered in terms of its tempering message and which must act as a qualifier on the extent to which small business can be viewed as flexible fast responder. The essence of this message is that smallness of operation 'bestows disadvantages as well as benefits'. Gibb (1983) and Cromie (1991) are examples of key commentators in this regard who draw attention to the difficulty and idiosyncrasies associated with small business organisations. Wyer and Smallbone

(1994, 1999) and Wyer and Mason (1998) have brought specific attention to the potential unique problem types which can impact small businesses. Such problems are described as owner-manager and size-related. Thus, owner-manager attitudes, aspirations and his/her understanding of the environmental issues might be the driving force behind small business development but, on the other hand, they may also be major constraining input under some organisational situations and contexts. The contextual issues of a small firm have a major impact on the firm's interpretative capabilities of analysing its internal and external events because many of those contextual issues constitute the mental model of the firm's owner-manager (Dalley and Hamilton, 2000). Similarly, size related constraints can impact the small business development, say, in terms of ability to access/hire skilled or management workforce (Curran, 1988). The essence of the message here, therefore, is that small businesses have potential flexibility and benefits of smallness, but may not be able to exploit them because of unique problem types which are also embedded features of smallness of operation (Wyer and Mason, 1998; 1999).

A key 'linkage' also exists here with regard to the above discussion of government recognition of small firm contribution to economic development and subsequent provision of support programmes: The value or ability of support programme can only be 'maximised' if such programmes are designed and delivered within the context of real understanding of the problem types small businesses face. Such government understanding remains questionable, though in recent years has grown apace (see for example, the advent of the Small Business Service).

Clearly such organisational and developmental characteristics and features provide key context which will need focus for consideration of the potential impact of new, supposedly facilitating and developments in information technology.

The underlying theme is that a limited understanding of the idiosyncrasies and problem types of small business development still exists. Thus, research studies focusing on the potential of IT in enhancing small business development must attempt to explore the unique enabling/constraining contexts of small firm development and the extent to which those factors act as enablers/inhibitors in the integration of new technologies as a potential business support input.

5.1.5 *Small Business is an open system:* Small businesses operate in an environment which is in continuous flux. To survive and continue functioning in such a labile and unstable environment an organisation needs to maintain continuous contact with its external environmental agents.

The issue here is continuous adaptation to the changing environmental conditions. This adaptation is only possible through exchanging information and views with external agents and business partners and on an organisation's ability to pick up appropriate signals through learning to analyse incoming data and information followed by making appropriate adjustments to their internal activities at sub-system component levels (e.g. marketing, HR, finance etc.) to create a spatio-temporal balance with external change situation.

Small business managements can do so by maintaining communication linkages and sharing and exchanging views and ideas with their business partners, gathering information from and disseminating information about their own products/services through external media (e.g. journals, advertisements, internet portals). A key issue is thus how small businesses learn at an individual organisation member and organisational learning level.

5.1.6 *Management style of small business:* One of the distinctive cultural attributes which clearly distinguishes a small firm from the rest is its style of management.

The decision making process within a small firm mainly rests with the CEO/owner-manager. In turn, the success, or failure, of the firm rests on the decision making abilities of the CEO or the owner-manager (Wyer and Smallbone, 1994, 1999). There are various socio-economic factors which lay behind this. Firstly, small businesses were generally founded by an individual with an intention of achieving something, showing society his/her abilities, or worth, by becoming successful and thus to establish oneself. Often, the vehemently independent mentality leads an individual to start a new firm to earn one's own living (Storey, 1993). Secondly, in most instances economic factors play a vital role. The small business, in most cases, is the only

source of income for owner-manager and his/her family (ibid). Thirdly, the firm is the creation of the owner-manager; so, it is imperative to the owner-manager to hold the helm of the firm by his own hand. This often leads to a small firm's management style becoming autocratic and pivoted around the CEO/owner-manager's mind-set and personality (Wyer, 1990). As this decision making process is mostly under the control of the CEO/owner-manager and greatly influenced by the owner-manager, this often leads to making errors which at times turn out to be fatal. Unlike large organisations those small firm CEO/owner-managers are not professionally trained managers and often their contumacy of understanding of the world becomes predominant and thus misguides them to judge the situation impartially and inhibits them to act in a proactive and professional manner. By the same token, it can be argued that a pivotal role of small firm owner-managers will see some of those firms with capable, open-minded owner-managers who are willing and able to learn and well positioned to seek out and work toward seizing developmental opportunities.

5.1.7 *The impact of a contemporary unpredictable operating environment: void in the strategic management literature to explain small business development in such a context:* Most of the strategic planning recipes, as prescribed by traditional strategic management literature, consist of a cyclic process of strategic analysis - choice- implementation. Those rationales were based on an assumption of operating environmental conditions being stable and thus visible, predictable and benign (Chakravarty, 1997). Stacey (1990, 1993) contends that change issues within such an environment can be conceptualised as 'closed' and 'contained'.

On the other hand, the operating environment of small firms may often not be stable. With their typical organisational attributes of small size, meager financial resources, small customer base and limited market control ability, a small firm always operates within a turbulent environment. Given their size related limitations (Gibb, 1993) along with their idiosyncratic management practices, small business operating environments may often be perceived as in a continuous flux. In such a milieu traditional rational long-term management practices are inapplicable (Wyer, 1998).

The main theme is that small businesses often operate in a volatile, unstable and unknowable environment where the change situation is predominantly 'open-ended'

(Stacey, 1990, 1993). In such an environmental situation it may not be feasible to plan long-term. Instead, tentative evidence tends to support processes based upon a step by step, but messy, learning approach in their strategy building processes (Wyer and Mason, 1998a). A small firm's success, or failure, may thus greatly depend on its willingness and ability to learn from its environment. This is possible only through maintaining dialogue with its key environmental agents such as, for example, customers, suppliers, distributors and even competitors, scanning the environment for information, such as information about competitor's acts and movements, changes in home and foreign government policies, technological changes (Joyce et. al., 1990; Camillus and Datta, 1991) and, to use that information as stimuli for change.

Perhaps the key message from the current literature is not to dismiss completely the possibility that small businesses undertake rational systematic long-term planning modes of management (some may be trying). But rather that small business strategic control of a contemporary operating environment epitomized by unknowable, unpredictable change situations may have dimensions which are in the main learning-based which is more likely to lead to emergent strategy; but there may be more rational pre-determined, 'planning' type processes evident, at least from time to time. The 'real embedded message' is that small firms may adopt different relationships with the external environment for example (a) *reactive/adaptive*: where the small firm perceives an external environment which impacts its operation and which it must be receptive to. Or (b) *proactive*: where the environment is seen as an 'object' which can be realised and understood. The organisation is here seen as capable of learning, but the environment is not. Thus it is an environment which can be learned about and proacted upon. Or (c) The environment is *co-determined*: The environment is accepted as also capable of learning and the organisation thus acts with it, not upon it. The environment can influence the organisation and the organisation can influence the environment. Here, therefore, a small business would proceed by recognising that it can co-create and enact its environment (Dixon, 1994).

5.2.0 The Internet/Information Superhighway:

5.2.1 Definition: The concept of the Information Super Highway (ISH) may be defined as a broadband communication channel carrying integrated audio-visual digitised data at a very high speed for all possible human uses (Anderson, 1995).

Although the ISH technology is still at its early embryonic stage there exist several practical, but partial, implementations and uses of this technology in various trade names. However, the predominant body of them is known as the Internet with its html protocol and in World Wide Web infrastructure.

Researchers define the Internet from their own research perspectives. The reasons for this are its rapid growth, permeation to almost all corners of human life, the apocalyptic changes it has brought already and, inexorable changes being brought by it, almost by the day, to human society and their way of life.

Some define it as a communication media (Levitt, 1995) while to another group it is a communication tool for information retrieval or an instrument facilitating shopping in a Cyber Mall (Dutta and Segev, 1999). It is also seen by another group as a media to interact with and/or exchanging ideas between various groups (Levitt, 1995). In the same vein, the Internet's pervasive progression into human social activities, and thus its instrumental role in redefining those social relations and activities lead others to see it as an evolutionary process in a social context (Ramumurthy and Vadapally, 1998).

The underlying theme is that the Internet is an "Indian Elephant". Everybody's perception about it is true, everyone's definition of the Internet is correct as long as it is seen from his or her perspective or situation.

In the context of this investigation, therefore, the Internet is to be considered in a base-form as a computer mediated 'Information infrastructure' (Poon and Swatman, 1995).

5.2.2 Potential business support input: The main strength of the Internet lies with its versatility to interconnect disparate communicating hardwares in different user combinations such as one-to-many, many-to-many or one-to-one (Deighton, 1996) irrespective of their geographic location making the concept of space and time meaningless and void. With this flexibility no doubt the Internet will be able to influence the traditional marketing paradigm through intervening into the respective marketing activities such as advertising, selling or transactions (Anhern, 1995) or, create a new electrical marketing paradigm based on the premise of a virtual value chain (Benjamin and Wigand, 1995) and information.

The fact is that the Internet with its easy, round the clock and cheap accessibility to customers and vendors alike impugns the traditional marketing concept, based on 4Ps (Kotler, 1994), while placing a parallel marketing paradigm based on the premise of information and knowledge. Within this new marketing domain the Internet's role is to interconnect vendors and customers directly in a two way dialogue process and to bring to the fore of customers the opportunity of accessing information about product/service on offer, or vendors offering them. In this new information/knowledge based marketing concept customers have the predominance over the vendors, due to their accessibility to apposite information, in contrast to traditional marketing philosophy where vendor(s) control the flow and direction of information thus, in turn, controlling the customer's choice and tastes (Amstrong and Hagel, 1996; Hoffman and Novak, 1996; Baily and Bakos, 1997; Riggins, 1998).

In the context of competition in an Internet led milieu, the traditional concept of competition is required to be replaced by a new knowledge based competition to be founded on the tenet of (i) quick maneuverability (ii) flexibility and (iii) leverage (Yoffe and Cusumono, 1998). The underlying fact is that in a business environment where information is widely available and the meaning of space and time are void, the winner will be the one(s) who would be organic enough to be able to maneuver rapidly within such a small and fast moving environment. Thus in this new changing environmental situation SMEs appear to have the *potential* to use the Internet technology to their advantage, along with their organisational vantages of flexibility, flatter structure and informal culture in order to gain competitive advantage in this fast moving world. For this, however, SMEs would need to reorganise themselves in

absorbing this new technological paradigm within their organisational culture with the understanding of entering into a completely new competitive world where competition is knowledge based and success pivots on scanning, retrieval and analysis of available information.

Synthesizing the insight from the small business literature (as summarised above) points to the need for this potential to be considered within the context of the 'idiosyncrasies' of the small business in terms of both possible advantage of small size and of possible unique problem-types which the small business may face. And of idiosyncratic strategic learning strategy development processes

5.2.3 Potential application within a SME context: The Internet-initiated changing scenario appears favourable to the small firms sector. Internet's low cost, easy accessibility to market information along with the small size related advantages of small firms should mean that they will be able to maneuver quickly in markets to compete on equal footing with their resource-rich larger counterparts. However, competition will be based on information and knowledge and the winners in this new information/knowledge based competition will be those who can act proactively in the gathering and processing of data to information and learn quickly from their environmental agents.

5.2.4 Limitations of SME strategy development processes: For Aram and Cohen (1990) a small increase in effort to improve their strategies results in considerable improvements in market positions for small firms. However, there are two major difficulties in achieving this gain. On the one hand, as discussed earlier, traditional strategy development paradigms may only be applicable in a relatively benign and stable environment. Resource-rich larger organisations may be capable of undertaking more formal long-term planning processes, but for Wyer (1998) such formal analytical planning approaches "should be considered within the context of the assumptions upon which the concept is based". Small firms are often overlooked or seen as a miniature version of larger organisations as a 'little big business' (Welsh and White, 1981; Dandridge, 1985) with their size related attributes and their idiosyncratic management styles culminating in completely different characteristics to large organisations.

Small firms with their small size, financial constraints and small customer base are often in a precarious position within their operating environment. The management style and ability of a small firm often acts as an enabler/inhibitor regarding its success. For example, with regard to the question of introduction of a new technology for improving a small firm's productivity, Lefevbre et. al. (1997) observe the influencing inputs of the CEO/owner-manager regarding the selection of the system. They define this process as the 'Prism Effect' since anything good or bad for the firm is seen and judged from the viewpoint of CEO/owner-manager. In the context of the use of the Internet by small firms Poon and Swatman (1998) highlight that it is the CEO/OM's active involvement in using this technology that encourages the employees to use it. Thus, one key issue relates to owner-manager's mindset and ability regarding the actual uptake of a new technology.

But the major underlying theme is probably the limited understanding of the small firm development and management processes. As the mainstream literature reviews above highlight, strategy development practices for small firms differ considerably from that of large firms. As operating environments of small firms are uncertain and volatile, small firms probably need to 'discover' and learn about unpredictable, unstable or, 'open ended' environmental change situations (Stacey, 1990, 1993). If in such a situation the success of a small firm depends on the willingness to learn from the environment in an often messy process (Wyer and Mason, 1998), then traditional management vehicles such as marketing information systems may act as limited interpretative frames of reference when considering potential IT applications within small firms. Such learning is often problem- and work-context based with externally revealed facts and insight being worked through into information and knowledge which forms the foundations for effective strategy adjustments to markets, products and processes activities within the small firm. Thus, if this interpretation of the small firm strategy development process holds, marketing information systems, and the use of IT therein, cannot be considered in the small firm within the context of traditional rational long-term development processes.

5.2.5 The key role of interface/dialogue within small business learning processes:

The necessity of small firm learning in a labile environment from the environmental

actors as described above may be achieved through making and keeping contacts with environmental agents like customers, suppliers and dialogue with them. It is also, necessary for them to scan their environment for information from their competitors, governments etc. in order to learn from such available insight. The Internet can play a vital role in those learning processes in that it can not only act as a vast information data base but could also be used as a communication media to maintain the dialogues with key informants as mentioned above.

In the context of environmental scanning processes, the Internet could take on the useful role as a media for gathering information. Prescriptively speaking, it seems that small firms must learn to 'discover' in their innovative ways to use this media as a tool for learning. In the process they must 'learn how to learn' through experiments and trying things out. For example, the Internet could be used to scan the environment for information and may be used for intelligence purposes about the development of products/services by competitors (Pawar and Sharda, 1997). On the other hand, it could be used to learn about the change in consumer behaviour and taste and could be used by the firm to re-orientate their marketing strategies. Such is the apparent potential.

In order to improve this learning process it appears imperative for small firms to maintain a continuous dialogue with their environmental agents as part of their learning processes. The academic foundation of such an assertion rests in the changing view of learning processes. Interpretation of the potential utility of the Internet in underpinning small business developments is unlikely to provide value (to academics and owner-managers) if learning is continued to be viewed as information strategy. Small firm learning is not about 'storing information', or about an objective world to be learned about by breaking it down into digestible facts. A dialogical perspective to learning sees that learning resides in the owner manager and his/her team and in the relationships of the team to actors such as customers and suppliers (see Hawkins, 1994). In this context a small firm, in order to form a conduit for the maintenance of dialogue with its external environmental agents as well as the gathering of information from its environment will require the active use of the Internet. Small firms must learn to 'discover' their own innovative ways to use this technology as a media for, and facilitator of, learning. But within a context of

idiosyncratic, informal management processes and potential impacting unique problem types.

5.2.6 *The issue of IT: inability to address/accommodate tacit knowledge:* From the above discussion it is therefore clear that in a volatile and labile environment businesses need to learn from their environmental agents. Traditional strategic management tools are probably inapplicable, inadequate and not designed for use in dynamic and moving environmental conditions. In recent years with the rapid growth of Information Technology, the organisational strategic view is therefore shifting from the dominant industrial organisation (IO) economic concept towards the resource-based view (Samplers, 1998). This resource-based view argues that the principal drivers for competitive and strategic advantages of a firm are its internal resources. The resource school further argues that it is intangible assets like learning (Senge, 1990) and knowledge (Winter, 1987) which are more important in creating competitive advantage for a firm in today's shifting environmental situations (Winter, 1987). Businesses, especially small businesses, need to be innovative in their learning processes as there is no universal recipe for learning in unpredictable and unknowable environmental conditions. In other words, they need to endeavor to improve their learning processes incessantly. In this continuous cycle of learning and innovation an organisation must understand that knowledge, and not information, is the main source for its innovative potential (Marshall, 1997; Castells, 1996). There are two ways of managing and enriching this source of knowledge. On the one hand, IS exploitation: that is to utilise the already existing knowledge base efficiently in similar situations. On the other hand, IS 'exploration': that is to create new knowledge through sharing, manipulating and synthesising existing knowledge to create new (Levinthal and March, 1993).

Learning itself, and organisational learning, is inherently associated with human factors and social issues. In this learning process a fine balance needs to be maintained between exploitation and exploration of knowledge. Despite the revelation that the human element is the factor of prime importance in the question of knowledge improvement (Davenport, 1995) and that it is possible with the help of IT/IS technology to address social issues like locating, harnessing and processing the invaluable cognitive knowledge 'located inside people's heads' and/or to encourage

development of knowledge through sharing through social networking, IT/IS technology is more focused on the tangible issues like establishing computer links between individuals or creating network structures and so on (Swan et. al., 1999). A key issue, therefore, is the extent to which the role of dialogical learning processes within the small business can be replaced, supported and/or complemented by IT systems. Depth of small business dialogical relationships with key informants/external actors are such as to allow for the 'digging out' of information and understanding, not least to reveal embedded tacit knowledge of such informants. What place the internet has in such learning processes?

5.2.7 Indicative inadequacies of IT provided information: The traditional economic think tank views that information is only available to users at a cost and, information gathering, capturing or retrieving activities were seen as support activities to a business. However, with the progress of information and communication technologies and the ever decreasing cost of accessing, gathering or retrieving information, this view is shifting towards the neoclassical economic view of the availability of information at a zero cost where information is seen as a resource and a tool for value creation (Sampler, 1998).

The role of information as one of the most vital elements for successfully running a business in today's dynamic environment is well recognised. However, the quality of information available on the Net is polemical. Firstly, one must consider that the database of available information is too vast and too general in nature (Financial Times, section 3: 21.10.00.). For example, there are several billion pages (www.google.com) of information available on the Internet today. It therefore needs some specialised skill to locate relevant information. To an inexperienced browser of the Net this vastness may turn out to be a farrago of data and information and it thus becomes a draconian job to locate the much needed information. Secondly, there is no vetting process about the authenticity of the information itself or its source due to the open infrastructure of the Internet.

On the other hand, the importance of a piece of information depends on two things. For Sampler (ibid), the strategic value of information is defined by: information specificity and information separability. The value of a piece of information may be

time specific: that is, its value lies in how quickly it was retrieved and utilised after it was originated. In this context information fluctuations in stock markets or values of shares are classic examples of time specificity of information as their values decrease by the second. In the same vein, information loses its value if it was not acquired at the time of occurrence of the event such as dramatic political changes or ecological events.

The present Internet infrastructure is comparatively slower than the conventional information media in addressing those sensitive and important time specific issues. There is a considerable lapse of time between the occurrence of an event and the availability of the information on the Net, thus losing much of its time specific value.

Chapters 3, 4 and 5 have thus formed the base sub-processes of this research study. Partial frames of guiding insight have been teased out of the extant literature to foothold the research approach to the subsequent investigative process of the study. These partial frames of guiding insight facilitate the tightening of the research focus and the nature and form of design. Foundation to this is the development of the conceptual framework underpinning the research, which the partial frames of insight ultimately inform. Prior to completion of the conceptual framework the partial frames of insight inform the approach to the pilot study. A broad-based interview questionnaire instrument is thus developed. The pilot study (described in chapter 6) is intended to verify the research design from interacting with small business practitioners to firm up understanding of the issues. The pilot study interview questionnaire so developed is provided in Appendix-I.

5.3 Research Focus:

The above analysis and synthesis of literature insight leads one to the conclusion that with regard to SMEs and their utilisation of the Internet the following areas need further investigation:

- The operating context and idiosyncratic culture of the SMEs.
- The level of understanding of SME management about the strategic potential of the Internet technology.

- The level of usage of IT/Internet related technology within small firms, especially as a strategic business vehicle.
- The level of management and/or category of employees empowered to use the Internet.
- The underlying causes which inhibit/stimulate a small firm to use the internet for strategic business purposes.
- The emerging change situation, if any, taking place within small firms' CEO/OMs' outlook which consequently reflect onto their business strategies in the wake of the unfolding internet related changes taking place in and around SMEs' operating environment.

These statements can be further refined into a set of research objectives and questions which in turn inform design and development of a suitable research methodology in order to complete the research framework for our present investigation.

Chapter Six

*Completing the
Bootstrapping Process:
Toward a Conceptual
Framework and
Empirical Investigation
Processes*

CHAPTER SIX:

COMPLETING THE BOOTSTRAPPING PROCESS: TOWARD A CONCEPTUAL FRAMEWORK AND EMPIRICAL INVESTIGATION PROCESSES.

6.0 Introduction:

This chapter is concerned with completion of the epistemological bootstrapping process and its operationisation in the form of elaboration of a conceptual framework and its application. Original to the bootstrapping process adopted in this study is the use of relevant areas of the extant literature to foothold approach to subsequent empirical case study and an associated initial ‘grounding’ of that literature insight in understanding from the world of small business practice. This involves the undertaking of an initial ‘pilot’ investigation to derive ‘grounded insight’ into ICT usage from a cross-section of SME owner-manager.

This chapter thus has a threefold aim: (i) to report on the undertaking of the pilot investigation; (ii) to integrate the pilot-derived insight into the literature-based insight and elaborate the conceptual research framework which underpin the study. The conceptual framework is also applied to make explicit the key research objectives and questions, and (iii) the conceptual framework and research questions are fully utilised to elaborate the research methods and analytical instruments in readiness for the subsequent case study based empirical investigation. This chapter forms these parts, each sequentially addressing the three aims and represents completion of the developmental components of the research design outlined in section 2.5 in chapter 2.

PART ONE:

Fielding (1993) suggests that if the research field is new and/or the researcher is new to social research a flexible approach is best, whilst Lofland (1971) asserts that unstructured or focused interview is the best way to find out the happenings around and within a milieu, rather than what predetermined things could happen. A pilot study can act as a pre-cursor to a main field study. In a new research field of which little or nebulous knowledge exists, or for a new researcher, the pilot study is helpful in re-examining the research questions raised and in modifying them in line with the facts divulged by the study – within this study, in line with the insight derived from the literature-based bootstrapping. This chapter therefore firstly presents a ‘pilot’ investigation to bootstrap base insight from the world of small business management practice, and effectively constitutes an additional footholding device to further inform the approach to the empirical case study investigation.

6.1 Purpose of the Pilot Investigation:

In the context of this present study of the impact of Internet technology on the organisational aspects (including: organisational strategies and structure) of small-medium size firms little is known to date. As discussed earlier in chapter II this field is relatively immature and nascent. It is therefore felt appropriate to conduct a pilot investigation to qualitatively explore the key areas of the Internet usage within a cross-section of the small firm sector. Firstly, to facilitate the build up of insight from the world of small business practice which can offer supporting or refuting input to the literature-derived insight and for the re-visiting or re-phrasing of the research questions. And, secondly, to verify the research design so as to give it a firm footing before approaching the next phase of the research. The only way to achieve the above goals is to interact with, and to discuss the issues with, the subject itself because for Archer (1988) ‘*Reality is an inter subjective construction of shared human cognitive apparatus*’ and real knowledge could only be acquired through face-to-face discussion with the key informants surrounding the subject under investigation. Within a context of time, resource and financial constraints, the pilot investigation was based upon a number of semi-structured interviews of reasonable duration conducted over the telephone.

The study focused on Hertfordshire based small electronic firms. This particular geographic region was used for the following reasons:

- i. Hertfordshire has for some time been well known as one of the important bases for Britain's high-tech. defence complexes, its rich high-tech. cluster of small electronics companies and source of high-tech. skilled worker base. This defence industry includes high tech. SMEs and is the main wealth generator and employment provider for the south-eastern part of the country.
- ii. On the assumption that high-tech. organisations should be the early users of an emerging new technology, be able to realise the potential of the Internet technology earlier and thus be able to use it in a proactive manner. In particular, SMEs, in theory at least, are proffered for their adaptability, flexibility and innovative characteristics, as discussed earlier.
- iii. Being high-technology organisations there should be less resistance from the senior managers who should have some predilection in accepting the Internet technology as an organisational tool for enhancing their business activities. Thus the unfolding change processes within those firms may be precipitous.
- iv. A homogeneous industrial culture will be helpful to focus on culture change processes in the context of this present study; which in turn could be useful as a foot holding for future research in this domain.

The 'panel' of businesses was chosen from a list of firms available on Hertfordshire County Council's web-site. Other criterion applied in selecting the firms were:

- They are small according to the EU definition, i.e. employ number between 10 and 49 workers.

- They are engaged directly/indirectly in electronic manufacturing/services or distribution businesses.
- They have Internet connection.
- They are willing to participate in the survey

A number of firms from the list sample that met the above criterion were approached at random. First, twelve of the firms willing to participate in the survey were interviewed.

6.2 Pilot Investigation:

The interviews were carried out by telephone between the last week of September and the second week of October 2000 using a semi-structured research methodology aiming at around 20-25 minutes duration each. The purpose of this was to persuade as many firms as possible to take part in the survey without demanding much of their hard pressed valuable time.

Two exceptions were included within the survey in respect of firm size. One was a firm with only one employee: the owner manager. The other one was a firm with around 100 employees. The reason for including the former is that it is a classic example of a cyber-age organisation which hires/pulls resources through Internet based networking from various geographical locations and engages whoever and whenever the appropriate skill-set is needed to complete a project. This firm also has customers on the continent. The purpose of including activities of the other firm, which was a medium sized firm according to EU definition, is to passively compare the activities of small firms with those of medium.

A set of 18 questions was used as a guide for the interviews. The questionnaire was used purely as a vehicle to keep the conversation on track without losing its informality and rigour. The dialogue was carried out with the CEO/owner-manager or with the person who the managers referred to as the best person to talk to in this context. The following facts emerged from the whole investigatory exercise:

6.3 Results:

There was a melange of views expressed about the benefits for connecting to the Net. The following are the general views as unfolded from the exercise:

Internet Awareness: It appeared that all of the firms are aware of strengths and weaknesses of the Internet use.

Cost saving: The majority of the firms suggested that they save a sizable sum of money on communication and a substantial amount on advertising through using the Internet.

Advertising: The view of the majority was that the Net made it possible to make known their existence as a product/service provider to their target market(s), which was previously impossible due to exorbitant high cost for advertising through conventional advertising media such as trade magazines. The Internet also made it possible for those firms to present themselves across world markets through their web-presence.

Communication: Almost all of these firms agreed that their communication processes have become faster, cheaper and more convenient. However, on probing this issue further it emerged that this convenience centred on the asynchronous nature of Internet communication effectively offering a cheaper and faster fax machine.

Information Exchange: The participant firms extensively use the e-mail for data, file, engineering drawing transfer and for business quotation purposes. There is also an increased use of the e-mail to communicate with their distributors and sales personnel. However, there was no indication of exchanging views with customers or distributors. Only one participant expressed his views of the Net's use for information gathering but whether it was practically implemented by him is questionable.

Web-Site: It emerged that most of those firms either have a web-site or are planning to have one in the near future, indicating their growing realisation of the requirement of having a web-site for one reason or another. The web-sites were used for advertising

relevant products/services, displaying prices, portraying catalogues and, in some cases, communicating a company profile.

The web-site maintenance and updating functions were sub-contracted out to external organisations by most of the firms due to a lack of internal expertise. In those cases the upgrading takes place at around 2-3 months intervals. In cases where the CEO/manager is a computer enthusiast it emerged that the upgrading is more frequent as it is carried out by the manager himself.

Financial Transaction: None of the firms use the Net for completing financial transactions of any kind.

They do not exchange any pertinent sensitive information over the Net. Some participants expressed this as 'strict' company policy. It emerged that security is their prime concern in issuing such guidelines.

Organisational Strategies: Almost all of those firms expressed that there was no change in their business strategies or any change in their organisational structure. Although it emerged that in one case the firm managed to trim its sales force following the Internet installation.

It also emerged that there is not a particular person employed by the firms specifically responsible for the Internet's business use or for exploring its possible strategic use. The Internet responsibilities lie either with the marketing department, or with the engineers or with the CEO/OM. The firms use the Internet in the most conventional ways. They either use it for communication or for advertising purposes. Some have the Internet connection because their competitors have it, while others see it as an enhancing agent of their corporate image. In the context of its use where the responsibility lies with the marketing department, they see the Internet as a marketing tool: for example one marketing manager blatantly expressed her view of using the Internet around the traditional 4Ps marketing concept. In cases where responsibilities lie with the engineering department, the firms use it only as a faster data transfer communication channel. Where CEOs/OMs control the Internet, they are too pressed with the day-to-day vagaries of their firm to think about using this tool for strategic purposes.

6.4 Lessons Learned: Grounding the Literature in Insight Derived

This pilot investigation unfolds interesting insight about the use of the Internet by Hertfordshire SMEs. It emerges that the participants' views of perceived gain from use of the Net at present focus on short-term gains such as day-to-day savings from using the Net for communication and advertising purposes. They do not have any long-term view of the Internet use, nor use it strategically. It emerged from the discussions that the participant's visions do not extend beyond basic marketing concepts which is indicative of their limited management skills, thus concurring with Sen's findings (1995). On the other hand, this shortcoming in 'strategic vision' contradicts Bloch et. al. (1996) who assert that a well planned strategy is needed to be successful in Internet based businesses. The author's investigation was unable, however, to identify any trace of integrating or integration of the Internet with the internal organisational activities of the participant firms. The IT literature (Venkataraman, 1994; Swatman et. al., 1994) indicates that well organised integration of IT functions with the business functions are necessary to achieve long-term gain. This phenomenon is therefore to be delved into during the mainstream field study.

On the other hand, there is a growing overall awareness among Hertfordshire SMEs about the Internet and its benefits and drawbacks which contrasts with the recent DSTI report. However, the author's investigation does unfold issues such as SME Internet use as a conventional communication media or as a traditional, but cheaper, advertising media as congruent with the findings of Poon and Swatman (1995), Poon and Swatman (1997b) and Barker (1995), and partially concurs with Anhern's (1995) findings. In the latter case, the 'transaction space' concept was totally eschewed by the SMEs.

In the context of marketing use, the participant firms do not see beyond the traditional marketing concept in contrast to the Internet-based new marketing paradigm as described by researchers such as Hoffman and Novak (1996), Baily and Bakos (1997) and Riggins (1998).

The participant SMEs outsourcing of web-site maintenance and upgrading activities concurs with Curran's (1988) view in that they are finance starved, do not have

adequately trained staff and may be unable to offer suitable financial compensation packages and/or career progression to woo trained staff due to their small size. That they engage the same staff to various duties (as emerged from conversation with Ms. Scott, Cal Controls) strengthens this view. The study also confirms the views of earlier researchers such as DeLone (1988), Martin (1989), Yap et. al. (1992), Chen and Williams (1993) and Poon and Swatman (1997a) in that if the CEO/OM is a technical enthusiast the firm's possibility of using the Internet, as well as empowerment of the employees to use it, is greatly enhanced (for example, Mr. Dempster's firm). The infrequent or long cycles of upgrading of the web-site also reveals that the participant firms either do not value or do not understand the importance of environmental scanning processes in order to gather and upgrade their information resources in a continuous manner which is essential as described by Levitt (1995), Logan and Logan (1996), Pawar and Sharda (1997) and Wyer and Mason (1998a).

Expectations were confirmed by the pilot investigation that the process of telephone interview or survey is not an appropriate or adequate mode of examination to reveal the 'richness' or 'thickness' of insight and understanding sufficient into ICT uptake and usage/non-usage in a small business strategic development context. It was impossible to judge to what extent the answers given were 'true', skeletal or superficial or were exaggerated to improve the company's image. Moreover, the answers were short and too focused. The exercise did, however, divulge valuable

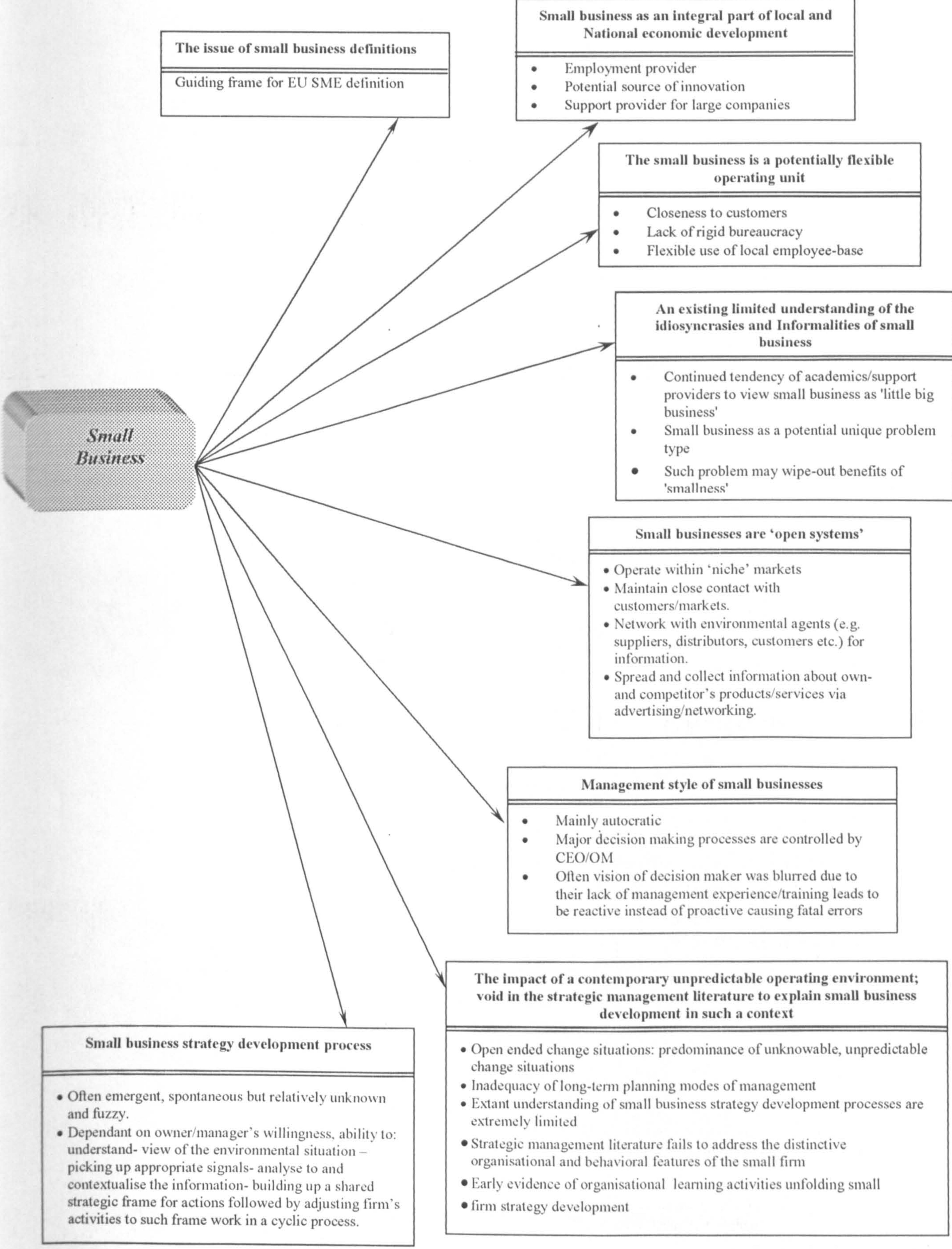


Fig C: Firmed up Partial Frames on Small Business Insight Emerged from Overall Bootstrap

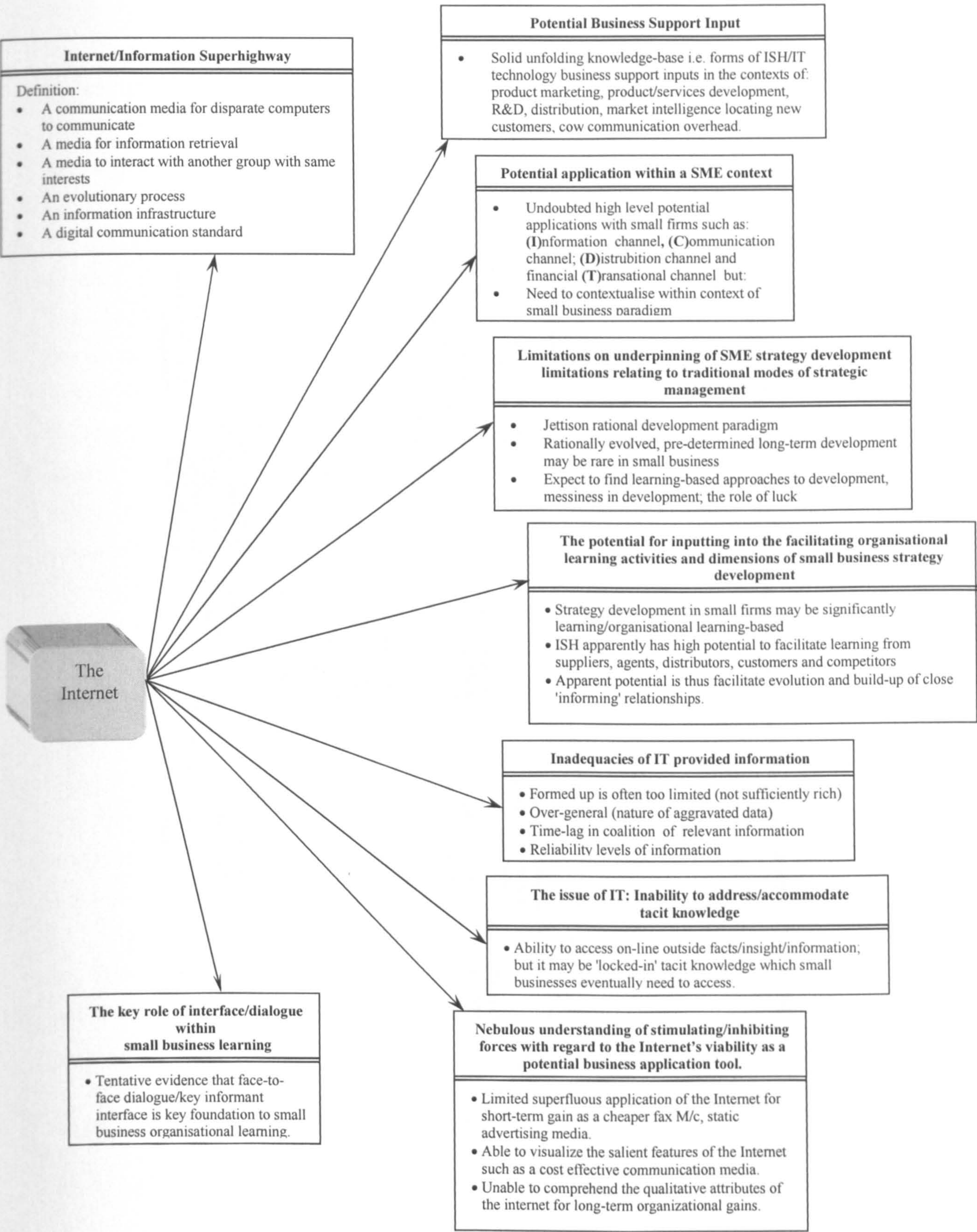


Fig D: Firmed up Partial Frames on the Internet Insight Emerged from Overall Bootstrap

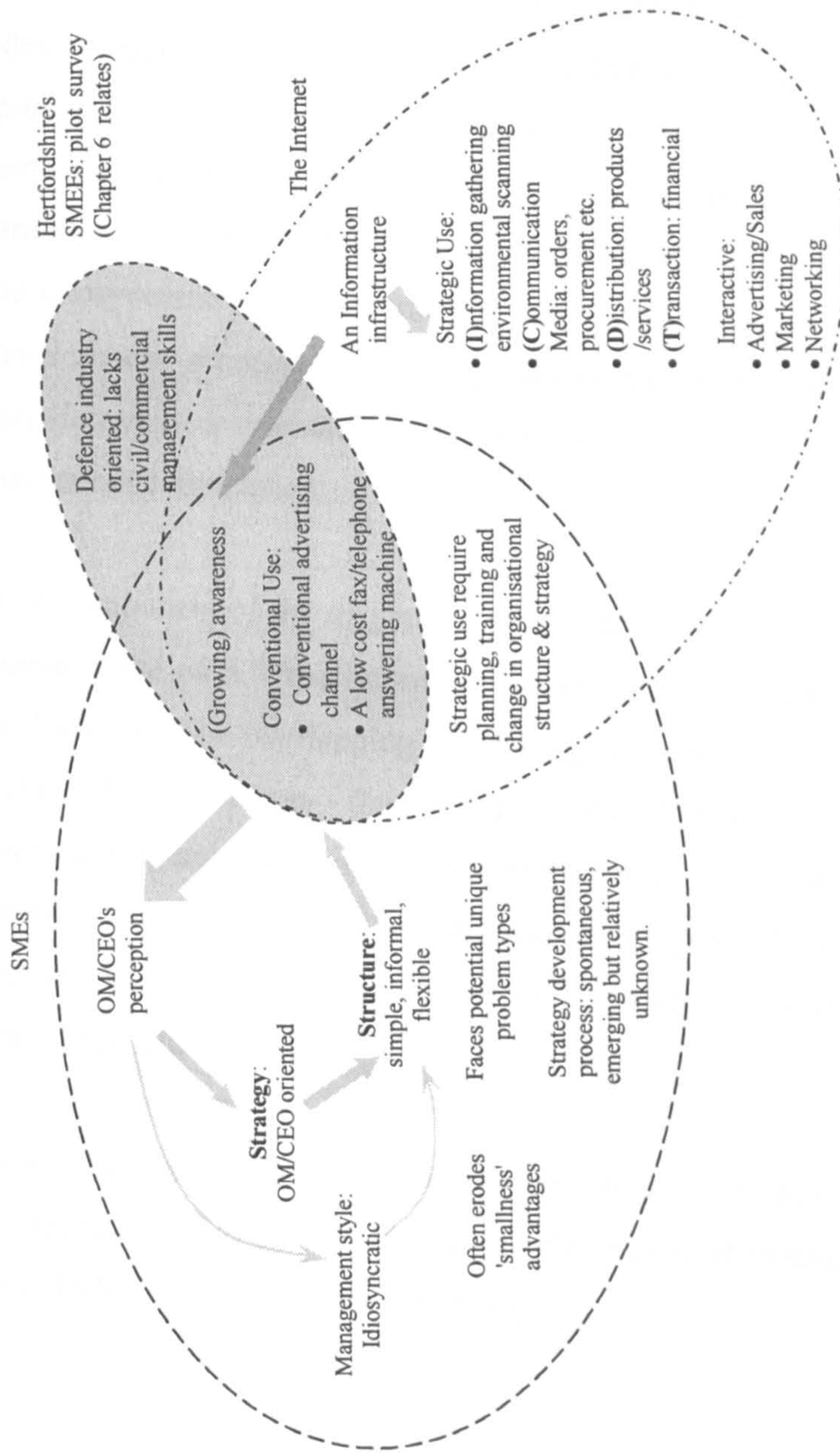


Fig-E: A Summary Diagrammatic Synthesis of the 'Bootstrapping' Insight.

insight as a ‘base world of small business management practice input’ as support to the literature-based ‘bootstrapping’ through helping to firm up the partial frames of insight. The firmed up partial frames are portrayed in Figs C and D.

6.5 A Summary Diagrammatic Synthesis of Key ‘Bootstrapping’ Insight:

A Venn diagram is used (Fig E, page 104) to highlight, integrate and contextualise key small business developmental characteristics and ICT/Internet features and issues raised in the bootstrapping process. The left-side component of the diagram makes explicit the likely pivotal position of the owner manager and the role of his/her perceptions and worldviews in strategy formulation process. Integral to this is management style and organisational structure that may be idiosyncratic and/or informal in nature, and which will be key facilitators of the strategy development process. The strategy development process may, at times, have an intended pre-determined orientation; but may frequently have a spontaneous or and/or emergent, unintended dimension.

The right-side component of the diagram portrays literature- and pilot study- suggested areas of conventional usage of ICT/the Internet (encapsulated by the integrated use of component three of the diagram). The overlapping positioning of these two components of the diagram allows for: (a) in the shaded area - the making explicit of likely areas of ‘growing awareness’ by SME owner management of conventional applications of ICT/the internet. And (b) in the non-shade area – a possible ‘capability and knowledge gap’ where existing small business organisation, strategy and/or training may be deficient and constrain potential strategic use and application of ICT/the Internet.

The shaded area of component three of the diagram (shown to protrude outside of components one and two) highlights the possible existence of commercial management deficiencies that defence-oriented SMEs within Hertfordshire may face.

PART TWO:

6.6.0 The Approach to Build up of the Conceptual Framework:

A great deal of management research activity has, in recent years, focused upon small business development. Whilst many excellent studies are beginning to reveal understanding of small business management and development processes, much of the research continues to

utilise large company oriented research paradigms and frameworks (Gibb and Davies, 1980; Carson, 1995; Wyer and Barrett, 2002). The approach to the build up the conceptual framework underpinning this research is founded on several distinctive and interconnected features (Wyer and Smallbone, 1999) which provide for the achievement of richer insight into small business development and management activities:

- (1) Recognition of the small business as qualitatively different from the large company and as a potential unique problem type.
- (2) A fully contextual positing of the small business in order to facilitate the unfolding of relevant external and internal change and development issues.
- (3) The transcending of 'snapshot' configurations of the small business by incorporating recognition of the dynamic nature of the external change context and of internal developments-- thus bringing focus to the *processual* nature of the phenomena under study.
- (4) Utilisation of bootstrapped frames of guiding insight that comprise empirically verifiable insight and concepts to underpin development of the particular components of the framework and accompanying explanation of the role of the component parts and their interrelatedness within the small business development context (Gibb, 1992; Wyer and Smallbone, 1999).

6.6.1 The Building up of a Conceptual Framework for the Investigation:

The synthesised summary insight of the overall bootstrap process, described in the previous section and depicted in Fig-E, reveals that the organisational culture of a small business is informal, flexible and potentially fast responsive to market demand(s). But it is also inherently problematic. The management activities of a small firm are mostly controlled by the owner-manager and driven by his/her personality value, attitudes and motivations. However, little is understood about small business management and strategy building processes. The ICT/Internet technology is a cheaper, flexible and convenient-to-use information infrastructure having both salient and non-salient attributes offering potential strategic gains through short- and long-term applications respectively.

The pilot study part of the bootstrap reveals that the sampled small firms are, in the main, only able to see and utilise the ICT/Internet in terms of short-term applications such as a telephone answering and/or a cheaper fax machine. They tend to miss the opportunity to visualise its non-salient features that can offer long-term gains through the strategic application of its interactive features in organisational activities like the gathering and disseminating of information from the external operating environment, products/services distribution, business communication and commercial and business transactions.

A conceptual framework for research is built out of this synthesised insight of the overall bootstrapping process viewing holistically the ICT/Internet induced small business strategy building process within the 'small business world' embracing both internal and external environmental operating contexts of a small business and the ICT/Internet as a component therein supporting the process.

6.6.2 A bootstrap synthesised foundation construct for SME's ICT/Internet based strategy formulation process:

Examination of the firmed-up boot-strap derived partial frames and the synthesised insight derived from them reveals that they can be initially categorised into three conceptual sub-frames in terms of their roles in the SME ICT/Internet implicated strategy building process. SME partial frames can thus be categorised in terms of their external environmental and internal operating contexts in relation to their supra- and task system domain activities, and, implicitly, in terms of the mutual interdependence of the small business and its external operating context- a deterministic/voluntaristic interdependence between small firm's management and its external environment.

The third sub-frame includes teased out ICT/internet partial frame components with attributes as a potential small business support input vehicle enabling small businesses to re-organise/re-engineer their value chain components for interactive use of the ICT/Internet within a holistic SME frame of reference, in both external and internal SME environmental situations.

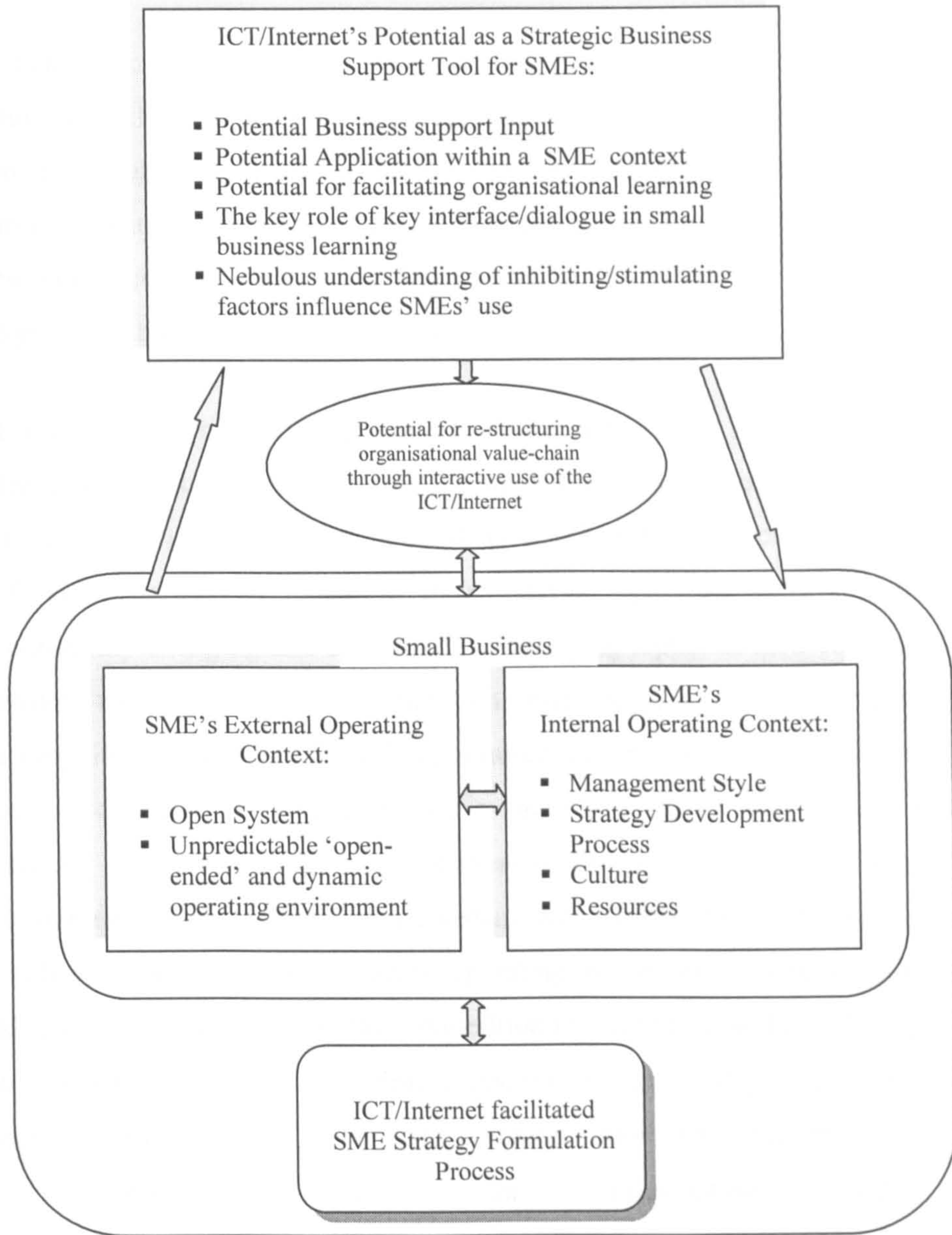


Fig. F: A Foundation Construct of SME's ICT/Internet based Strategy Formulation Process

The interrelation between these three categorised sub-frames and their relation to the SME strategy building process crystallises into a foundation construct for the conceptual framework for the research. A graphical representation of the construct conceptualising the synthesised interrelation between various ICT/Internet, SME categories and bootstrap partial frame sub-components is provided in detail in Fig- F above.

6.6.3 Making Explicit the SME ICT/Internet Strategy Formulation Concept:

A detailed framework conceptualising the SME ICT/Internet initiated strategy formulation process, in turn, is built on by teasing out those relevant partial-frames, which appear to have influence on and relation to the ICT/Internet strategy formulation process of SMEs, and placing them into their respective sub-frames. This conceptual framework ultimately unfolds the final research objectives and guides the raising of the respective contextual research questions as posed by the bootstrap partial frames.

Key insight in the overall bootstrap process elicits the fact that for survival and to maintain their viability as business entities it is vital for small businesses to communicate with their external environmental agents since their markets for their finished products/ services and suppliers of raw materials all reside in their external operating environments and are themselves constantly changing and susceptible to changing inputs of their external actors. In order to perform those 'input' 'output' functions efficiently, it is imperative for a small business to keep itself informed, through continuous monitoring, and learning of changes occurring in its external environment because a small firm is not able to fully control its operating context. To the contrary a small business is often controlled by the vagaries of its external environment which in turn is in a constant state of flux. Therefore, successful small businesses behave more like open systems operating within environments epitomised by 'open-ended' change situations where the competition is precipitous and long term planning is very difficult, if not impossible, demanding incessant change activity within small business internal processes. The need is for constant communication with their respective external operating environment agents for information and signal gathering/acquiring/disseminating/feedbacks and for an efficient media for assisting with such activities.

In this context, the ICT/Internet offers small businesses quite a versatile and efficient 'four in one' channel for such communication, gathering of information and distribution of products to commercial transactions. However in order to utilise effectively and efficiently such a channel to their advantage, small businesses need to reconsider and occasionally reconfigure their value chains. This re-orientation process will be such that the individual value chain

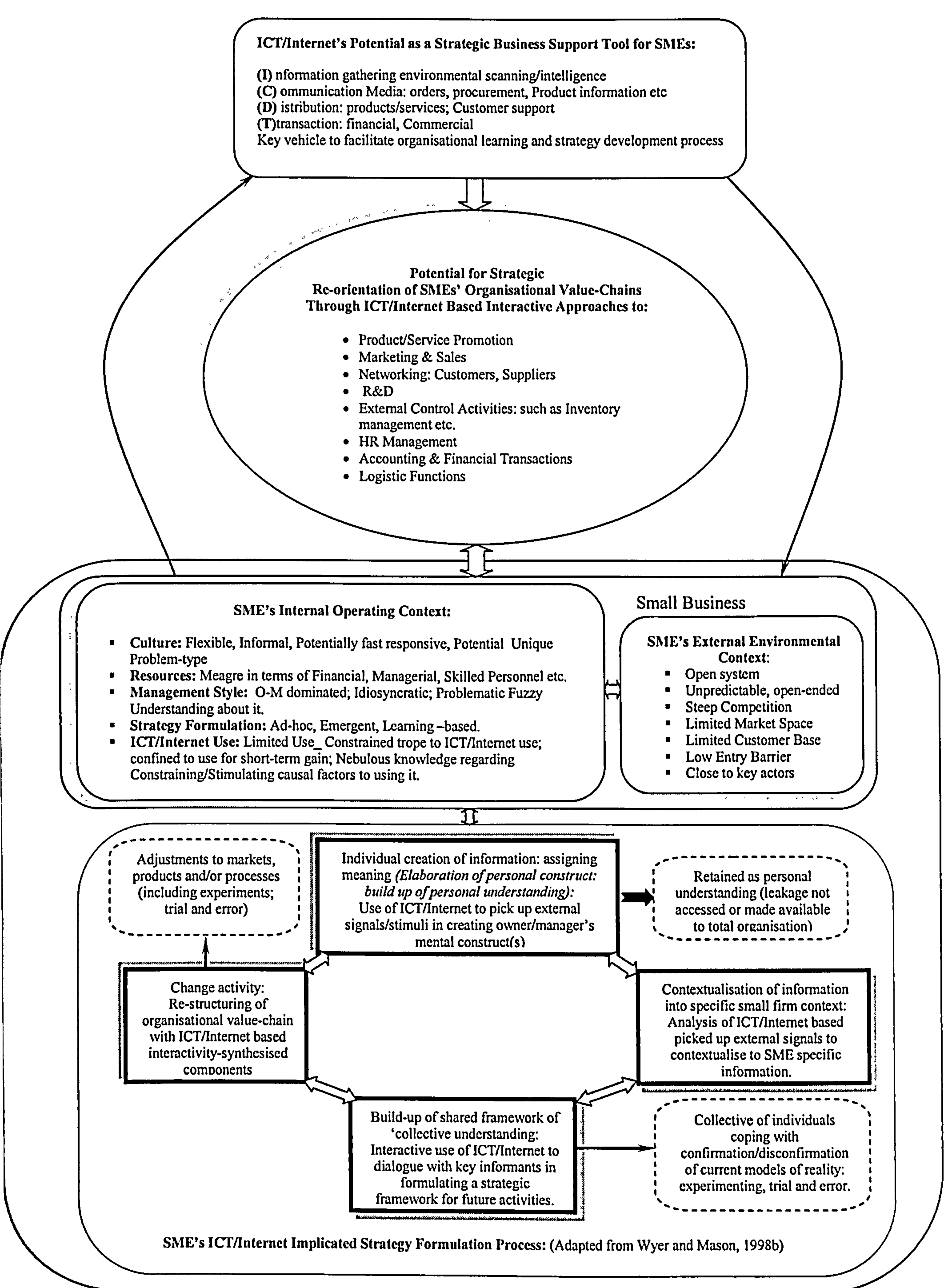


Fig. G: Conceptualisation of Small business' ICT/Internet-facilitated Strategy Development Process

'components' will be able to dialogue and discourse with their up-stream and down-stream external counterparts about the external environmental situation in an interactive manner and effect adjustments and re-adjustments to their internal activities to cope with the external change situation.

6.6.4 The Conceptual Framework Explained:

The conceptual framework underpinning this study has been developed through synthesis and integration of key informing inputs made explicit by the partial frames of guiding insight revealed by the 'bootstrapping process'.

The nature and form of the component parts of the conceptual framework and their inter-relatedness and interconnectedness are justified as follows:

Systems theory makes explicit the potential to posit business organisations as open systems made up of interdependent sub-systems (production, finance, marketing, etc), each sub-system having responsibility for interfacing with key activities and actors on the external 'environmental stage' upon which the business organisation itself is a co-actor. Thus, whilst the small business may not itself have physical departments across all of its sub-systems (for example, it may not have a physical marketing department or personnel department), it can be assumed that it will have a cross-section of sub-system organisation activities that must be performed.

To sustain ongoing survival and/or growth will require the owner manager to organise, manage and nurture development of those sub-systems and of the organisation (the overall system) of which the sub-systems are a part.

To effect such growth and development, will require interface with the external open-ended change environment and the ongoing build up of understanding of those external forces that impact and have implications for the existing markets, products and/or processes activities of the firm.

A part of the literature suggests that such external impact should be conceptualised as deterministic – such an assumption would lead the researcher to expect that the small business owner manager must *react* to the all-powerful forces of the firm's external operating context.

Other areas of the organisational literature would lead the researcher to expect that the owner manager can voluntarily 'choose' the external forces that impact the business and can thus manage the organisation relatively free from the confines of external change forces. Integral to the conceptual framework underpinning this study, however, is an assumption of mutual interdependence between the owner manager and the firm's external operating environment. On occasions the owner manager will have to accept the impact and influence of the environment, and possibly have little choice but to react to that influence. But on other occasions the owner manager will 'act' in such a way as to effectively mould the nature and form of 'slices' of the firm's external environment, and thus co-create that environment.

Such conceptualisation gives rise to the need for the researcher to give attention to the ways in which an owner manager and his/her key organisational members identify and act upon unexpected, or even unknowable, external change situations. This raises the proposition that many successful smaller businesses may not be able or willing to avail themselves of formal long-term strategic planning modes of management, but instead may 'learn the organisation along'. Such a framing of small business strategic control activity is utilised as an integral component of the overall conceptual framework in this study. An adaptation of the Wyer and Mason (1998) conceptualisation of the small business strategic learning processes is utilised as 'interpretative frame' to direct empirical examination of case study small firms. Here attention is drawn to key learning processes and activities in terms of consideration of nature and form of interface with key learning sources and actions of the 'small firm' in its external environment. How are existing owner manager/manager constructs and worldviews of 'slices' of the environment challenged and adjusted? Does dialogue with key informants (such as suppliers, customers or distributors), study of sources such as trade journals and/or learning activities such as experiment or trial and error form the typical or main learning actions underpinning strategic development? Integral to this is the concepts of individual learning and organisational learning. How do individual organisational members learn about strategic issues and how is the resultant understanding transformed into organisational learning in terms of strategic outcomes (effective strategic adjustment to existing markets, products and/or processes activities)?

Embedded within such a holistic, contextual, 'open system organisational learning' conceptualisation of the small business, is the issue of contribution and potential contribution of ICT/the Internet to facilitation of effective strategic control, strategic learning and sustained strategic development.

The model portrays the premise for identifying the ways existing products and/or services to be re-designed and/or re-organised and potential emergence of completely new products and services whose conceptualisation has become a possibility with the advent of ICT/Internet

Drawing upon outline extant understanding of ICT potential in this area allows for integration of ICT/Internet sub-components of the conceptual framework. Firstly, in terms of potential facilitators relating to the small business organisational learning and strategy development processes. And secondly and integral to this, in terms of attention to specific areas of the firms value chain and its value chain linkages to the external environment where specific sources of strategic reorientation may unfold for a particular small business. Formal identification and classification of any Internet strategies adopted by the case organisations is provided by application of a systematic framework: the ICDT model.

Effectively, the conceptual framework in its totality 'ties together' a body of supporting theory/concepts to inform and guide the approach to the empirical investigation of the case study firms within the research. The outline explanation offered above in integrated theory/concept terms, can be summarised as follows:

- *Open systems theory* posits the small business in its external environment as unit of analysis.
- The concept of unpredictable *open-ended change situations*
- *Conceptualisation of co-existing voluntarism/determinism*: draws attention to the mutual interdependency between the deterministic tendencies of the external environment and the voluntaristic characteristics of many owner managers.
- *Learning theory* directs one to the learning styles, preferences and actions of individual organisation members
- *Organisational learning theory* extends focus from individual to the issue of owner managers, if at all, anchor in the learning activities and abilities of their key staff. Or if for some small businesses organisational learning is little more than owner manager learning
- The concept of the *value chain and the wider value system*
- The *ICDT model* proffers the quad-segmenting of potential business opportunities proffered by ICT/Internet.

- Conceptualisation of the small business as a *potential unique problem and opportunity type* (vis-à-vis large companies)

A graphical representation of the conceptual framework portraying the synthesised interrelation between various ICT/Internet, SME categories and bootstrap partial frame sub-components is provided in detail in Fig-G on page 110.

6.6.5 Utilising the Conceptual Framework/Bootstrap Insight to Elicit the Research Objectives and Questions:

a) SME's ICT/Internet Implicated Strategy Formulation Process:

There is now a growing realisation that small businesses are not miniaturised versions of large organisations. However, whether may not the business tools applicable to large firms, or such tools developed for large businesses, also have application and in what form in a small business environmental context remains questionable.

The bootstrapping process conducted in this study reveals that there is a growing acceptance that, behind the apparent appearance as simply structured and active within an informal culture, the management process and the strategy development activities of a small firm are complex phenomena. Despite increased interest of academia and increasing research activities in these arenas what is understood about these phenomena represents the tip of an iceberg in that very little is known about the owner-manager (OM) dominated and controlled idiosyncratic culture, management and strategy development activities of small firms. This limited understanding of management and strategy development processes therefore requires further investigation as precursor to understanding ICT/Internet induced or facilitated strategic development processes in small firms. It is this nebulous extant knowledge base relating to the idiosyncrasies and informalities of small businesses and limited understanding of SME strategy development processes that reveals a research objective: *to enhance understanding of the nature and form of strategy development and management activities and processes within small-medium size businesses*. This in turn generates the following research question:

Q-1: What is the nature and form of SME management activities, practices and processes which have strategic implications and strategic outcomes?

b) ICT/Internet's Potential as a Strategic Business Support Tool for SMEs (*Potential for Strategic Re-orientation of SMEs' organisational value-chains through ICT/internet based interactive approaches*):

For meagre resourced SMEs the use of the ICT/Internet for business purposes can be particularly favourable due to its low cost and versatility attributes. The fast access and early availability of information to small businesses can provide them with an edge over their competitors allowing them to act in a proactive manner to more quickly appease market(s) demand with their product/services, irrespective of its geographical location(s). This was unimaginable for the small business sector in the pre-internet era. But to achieve such a goal small businesses need to challenge existing mindset and restructure or reorganise their respective value-chain and other organisational activities. For example, (i) creation of an internal culture/environment for interactive consultation with key boundary actors prior to developing customised products/services and (ii) use of the Internet to link on-line their respective value chain components i.e. management of the small firm's own value chain components and the linkages/potential linkages with other organisations' value chains (e.g. customers, distributors, suppliers) within the value system in totality in completing commercial transactions, hiring of personnel and so on.

However, an important criteria in this context is that small businesses need to contextualise those potential ICT/Internet applications in the context of their own internal and external environmental conditions. This contextualisation of the ICT/Internet to small business specific application may require strategic reorganisation of the SME's value chain activities. Inadequate understanding of this strategic activity ("the potential application of the Internet technology within a SME context") unfolds the research objective: *to investigate the extent to which the small firms contextualise the Internet applications within their organisational culture and the level of work force empowered in such operations*. This in turn raises the research question:

Q-2: What levels of management and workforce utilise the ICT/Internet technology and in what ways do they participate in strategy development processes and activities having strategic outcomes?

c) SME's External Environmental Context:

The bootstrapping process in its totality reveals that the Internet's strengths potentially outweigh its inherent weaknesses. The main strength of the ICT/Internet lies in its versatility in offering a flexible digital communication conduit making it possible for users of digital equipment with disparate communication protocols to establish communication links among themselves over extant telecommunication networks at a cheaper cost.

In the context of conducting business and commerce, this novel mode of communication offers fast accessibility and exchange of widely available information across the globe which in turn makes the previous concept of time and space void; thus providing the possibility for the business to 'leverage' the technology strategically as a business tool to its advantage.

As discussed earlier the bootstrap further reveals how small businesses need to communicate with their external agents/business partners in conducting business in order to survive and to maintain their existence as a viable commercial entity. In this regard, small businesses can be considered as open systems. In the context of communication, the ICT/Internet adds a new dimension to small firms' ways of conducting business through exchanging and disseminating information among business partners, gathering information from external operating environmental agents about product demand, customer tastes, future product demand, suppliers, change in government policies, and economic trends at both the micro- and macro levels.

It also enables a business to communicate flexibly with its business partners on various business matters such as placement of orders, sending invoices, offering products/services information to existing and potential customers and/or to using it as a distribution channel for various types of products/services, or for completing commercial and financial transactions.

These categorised potential business applications of the ICT/Internet into four 'virtual spaces' (Angehrn, 1997) of information gathering, product/service distribution, communication and commercial transaction bring to the fore for the small business the "ICT/Internet as a potential business support input vehicle". However, the bootstrap process reveals that there is paucity of extant knowledge in this area leading to the research objective: *to examine to what extent and in what ways SMEs draw upon ICT/Internet technology to input into strategy development activities and processes*. This ultimately raises the research question:

Q-3: To what extent and in what ways do SMEs utilise ICT/Internet technology to input into their strategy development activities in terms of their market, product and process activities, and activities contributing to such strategic outcomes?

d) SME's Internal Operating Context:

Key insight from the bootstrapping process relates to the issue that many small businesses may not be able to visualise the long-term benefit of the ICT/Internet's potential as a strategic business tool. Instead they see and utilise the salient features of its short-term benefits such as cheaper alternative to a fax machine. The bootstrap further reveals that even the high-tech SMEs were unable to fully strategically tap the potential of the ICT/Internet despite their early acceptance of this technology within their organisational fold.

In the main, there is no apparent understanding about those causal factors acting as stimuli to accepting the ICT/Internet at embryonic growth stage of its public or commercial use, or those causal factors acting as inhibitors to visualising the Internet's strategic potential as a business enhancer. Thus, nebulous understanding of stimulating and inhibiting forces within small businesses with regard to the Internet's viability as a potential business application tool provides the following research objectives: *(i) To determine what the key facilitators (enablers) are with regard to the uptake of Internet-related management vehicles within specific small firms and their operating conditions. And, (ii) To determine what the key constraining forces are restricting the uptake of such management vehicles in those small firms.* In turn this raises the following research questions:

Q-4: What are the key facilitators within the external and internal SME development contexts with regard to the uptake of the cross-section of internet related management vehicle?

Q-5: What are the key constraining forces (including people-oriented, financial and business oriented forces) restricting the uptake of such management vehicle?

The bootstrap component of this investigation also reveals that small businesses operate in a labile volatile environment. This sort of environmental context is epitomised by unpredictable 'open-ended' change situations (Stacey, 1990, 1993) where rational long-term planning

processes, as prescribed by main-stream literature are likely to be inapplicable. In such environmental conditions, survival and success of a firm, in particular that of a meagrely resourced small firm, largely depends on its owner management's willingness to learn, not only from its external environmental agents and business partners (Wyer and Mason, 1998b), but also from its competitors through business intelligence (Pawar and Sharda, 1997). The extant knowledge base propounds that ICT/Internet can make an enormous contribution to small business learning processes. In this context, the learning activities may be of a cyclic or messy nature where relevant environmental stimuli are filtered-in in order to tease out meaningful information. This is followed by contextualising the firm specific information, in consultations and discussions with business partners and senior staff, to effect creating a shared view of the operating environment so as to facilitate making appropriate adjustments to organisational and value chain component activities (i.e. primary and/or support activities) through trial and error experiments (Wyer and Mason, 1998b).

Understanding about such a small business learning-based strategy development process, and integral organisational learning activities and dimensions of small business strategy development, is relatively unknown and a hiatus in the extant knowledge base in this context points to the need for investigation in this area and leads to the research objective: *To enhance understanding of the way small businesses learn from their external agents and other learning sources and to what extent they utilise the Internet in this context input to organisational learning, in terms of foundations for appropriate adjustment to markets, products and/or process activities?*

This research objective thus raises the following relevant research question:

Q-6: What are the key sources and inputs of small business strategic learning. And how do small businesses transform externally derived insight and information into organisational learning in terms of foundation for adjustment to markets, products and/or process activities?

The above research objectives and research questions, posed by the conceptual framework, are tabulated in Table-1 showing their relationship to the bootstrap partial frames. The table also shows how this study intends to find answers to those research questions from using case study methods based on interpretative methodology.

6.7 Research Objectives:

The emerging 'theme' of this investigation to date, that is the need for greater understanding of the distinctiveness of the small business, how it identifies and acts upon a predominantly unknowable change environment to effect sustainable strategic development and the role and input thereof of IT (in an operational and strategic context), leads to the following research objectives for this study.

- (1) To enhance understanding, of the nature and form of strategy development and management activities and processes within small-medium size businesses.
- (2) To investigate the extent to which small firms contextualise the Internet applications within their organisational culture and the level of workforce empowered in such operations.
- (3) To examine to what extent and in what ways SMEs draw upon ICT/Internet technology to input into the strategy development activities and processes.
- (4) To determine what the key facilitators (enablers) are with regard to the uptake of the Internet-related-management vehicles within specific small firms and their operating conditions.
- (5) To determine what the key constraining forces are restricting the uptake of such management vehicles in those small firms.
- (6) To enhance understanding of the way small businesses learn from their external agents and other learning sources and to what extent they utilise the Internet in this context input to organisational learning, in terms of foundations for appropriate adjustment to markets, products and/or processes activities.

The nature and form of the research objectives in turn require a contextual, processual case study approach to the investigation.

6.8 Identified Key Research Questions:

The following embedded key research questions underpin the study:

- Q-1** What is the nature and form of SME management activities, practices and processes which have strategic implications and strategic outcomes?
- Q-2** What levels of management and workforce utilise the ICT/Internet technology and in what ways do they participate in strategy development processes and activities having strategic outcomes?
- Q-3** To what extent and in what ways do SMEs utilise ICT/Internet technology to input into their strategy development activities in terms of their market, product and process activities contributing to such strategic outcomes?
- Q-4** What are the key facilitators within the external and internal SME development contexts with regard to the uptake of the cross-section of internet related management vehicle?
- Q-5** What are the key constraining forces (including people-oriented, financial and business oriented forces) restricting the uptake of such management vehicle?
- Q-6** What are the key sources and inputs of small business strategic learning. And how do small businesses transform externally derived insight and information into organisational learning in terms of foundation for adjustment to markets, products and/or process activities?

PART THREE:

Following the development of the conceptual research framework, and elicited research objectives and research questions, this part now focuses on the development of the research method and appropriate analytical instruments and components for conducting the empirical investigation and subsequent analysis.

6.9 Informing the Mainstream Element of the Study:

Although there is common view of IT as a technological domain, there is a growing realisation among IT researchers of its increasing influence and consequent impact on individuals and organisations they serve. Any attempt to view IT and/or its impact alone or in isolation would result in 'incomplete understanding': the server and the served must be viewed together (Galliers and Land, 1987).

In the context of Internet technology and its impact on organisations, Vadapalli and Ramamurthy (1997) assert that the Internet is fast becoming a media for social involvement as a result of its ability to facilitate interaction between individuals and organisations, organisations and organisations and individual and individual. The Internet thus in its current form and direction of growth is becoming "a new social form and a new social context." (ibid). As the purpose of this investigation is to gain an insight into the impact of the Internet on organisational attributes, the issue is more of a sociological than a technological one. A deeper insight into the integration of the Internet within the organisation and the consequent cultural change issues is needed. In such a case a more focused research methodology is required (Poon and Swatman, 1997b).

Benbasat et. al. (1987) favour the case study approach particularly with regard to "certain types of problems: those in which theory and concept are at their early formative stages; and sticky, practice-based problems where the experiences of the actors are important and the context of action is critical". Remenyi and Williams (1995) assert that, in the study of information systems, case studies allow complex and rich evidence to be gathered. While for Cassell and Symon (1994) qualitative methods are sensitive enough to allow detailed analysis of change in organisational research.

Bootstrap partial frames/ Synthesised sub-components	Research Objectives	Research Questions	Person(s) to Interface/ Internet with
<p>An existing limited understanding of the idiosyncrasies and informalities of small business. Limited understanding of SME strategy development process.</p> <p>Potential application of the Internet technology within a SME context</p> <p>ICT/Internet's role as a potential business support input vehicle.</p>	<p>To enhance understanding of the nature and form of strategy development and management activities and processes within small-medium size businesses.</p> <p>To investigate the extent to which small firms contextualise the Internet applications within their organisational culture and the level of workforce empowered in such operations.</p> <p>To examine to what extent and in what ways SMEs draw upon ICT/Internet technology to input into the strategy development activities and processes.</p>	<p>Q 1: What is the nature and form of SME management activities, practices and processes which have strategic implications and strategic outcomes?</p> <p>Q 2: What levels of management and workforce utilise the ICT/Internet technology and in what ways do they participate in strategy development processes and activities having strategic outcomes?</p>	<p>Owner/owner-manager and external informing agents such as Herts.' Business Link, Hertfordshire County Council etc.</p> <p>Owner/owner-manager and personnel involved in Internet application/usage.</p>
<p>Nebulous understanding of stimulating/inhibiting forces within small businesses with regard to the Internet's viability as a potential business application tool.</p>	<p>To determine what the key facilitators (enablers) are with regard to the uptake of the Internet-related management vehicles within specific small firms and their operating conditions.</p> <p>b) To determine what the key constraining forces are restricting the uptake of such management vehicles in those small firms.</p>	<p>Q 3: To what extent and in what ways do SMEs utilise the ICT/Internet technology to input into their strategy development activities in terms of their market, product and process activities contributing to such strategic outcomes?</p> <p>Q 4: What are the key facilitators within the external and internal SME development contexts with regard to the uptake of the cross-section of internet related management vehicle?</p> <p>Q 5: What are the key constraining forces (including people-oriented, financial and business-oriented forces) restricting the uptake of such management vehicle?</p>	<p>Owner/owner-manager and external informing agents such as Herts.' business link, Hertfordshire county council etc.</p> <p>Owner/owner-manager and personnel involved in Internet application/usage.</p> <p>Owner/owner-manager and personnel involved in Internet application/usage.</p>
<p>The potential for inputting into the facilitating organisational learning activities and dimensions of small business strategy Development</p>	<p>To enhance understanding of the way the small businesses learn from their external agents and other learning sources and to what extent they utilise the Internet in this context and input to organisational learning in terms of foundations for appropriate adjustments to markets, products and/or processes activities.</p>	<p>Q 6: What are the key sources and inputs of small business strategic learning. And how do small businesses transform externally derived insight and information into organisational learning in terms of foundations for adjustment to markets, products and/or process activities?</p>	<p>Owner/owner-manager and personnel involved in Internet application/usage.</p>

Table 1: Bootstrap Partial Frames' Input to Raising Contextual Research Objectives and Questions and Informing Research Activities

The mainstream element of this study therefore adopts a multiple case study approach in accordance with Yin (1989) who contends that multiple-case study could be treated as multiple experiments leading to a 'replication logic' as for (Benbassat et. al., 1987) "multiple-case designs allow for cross-case analysis" and "...*multiple cases yield more general research results*".

The empirical case study approach thus builds around the following base protocol:

- 1) Case study approach to small electronic firms (employee No. 10-49) based in Hertfordshire making initial contact through telephone.
- 2) Visit and interview of the CEO/OM or the person responsible for the Internet activities of the firm e.g. the IT /Marketing/Sales Director/Manager etc.
- 3) Visit and interviews of 4 such firms.
- 4) The use of the 'bootstrap'-derived case interview instrument as guiding interview frame.
- 5) Interface with other key informants, observation of small business processes and examination of any relevant available firm-specific hard copy documentation and firm web pages.
- 6) The case studies to be conducted approximately between November, 2000 and January 2001 period.
- 7) Interview and dialogue on the Internet-related organisational issues pertinent to the research questions raised and to listen to the participant's experiences while taking notes and/or recording (with participant's permission) the interview in order to analyse the events to tease out the relevant information later.

6.10 The Selection Criteria for Main Stream Case Study Firms:

The selection procedure of the 'panel' of four case study firms was based on a mix of 'criterion based' ('purposeful sampling', Patton, 1990) or 'convenient sampling' (Weiss, 1994:24-29) as discussed in chapter 2.

Based on the selection criterion used in selecting the Pilot Study firms, several small businesses were identified from a list of firms available on Hertfordshire County Council's web-site. A sizable number of firms expressed their unwillingness to participate in the study on the grounds of pressure of work load and other business-related reasons. Of the remainder, although several firms expressed their interests, only four were available for immediate study with the rest unable to keep their appointment or having to cancel due to some unforeseen circumstances.

6.11 The Analytical Processes Underpinning the Approach to the Case Study Analysis

The analytical approach underpinning the build up of understanding of the case firms in this study consists of four 'analysis components' (adapted from Wyer and Barrett, 2002): (a) a process of descriptive, contextual analysis; (b) the build up of 'fractured-in-context' analysis; (c) a process of re-contextualisation; and (d) matrix-based comparative analysis.

(a) A process of descriptive contextual analysis

Several commentators have drawn attention to the pace at which small business research outputs have built up over recent years, and proceed to draw attention to the superficiality of much resultant insight due to its reliance on skeletal type survey investigations (Holmes 1992). One response to this is a call for research approaches to the enhancement of understanding of small business development based upon 'pure rich description' of developmental processes and issues which begin to produce 'thick' insight and flesh out the bones of extant understanding and misunderstanding. In the context of IS research, today's organisations are complex and composed of intertwined compound conceptual structures which are intelligible and difficult to

understand. In such cases *'the need for 'thick' description is just as important in trying to understand what is happening in connection with a complex computer-based information system'* (Walsham, 1995:75).

For Dyer and Wilkins (1991) 'good storytelling' about a single-case would provide better theoretical insights than multiple-case research based on creating good constructs. Eisenhart (1991) suggests that 'multiple-cases are a good means to create theory because they permit replication and extension among individual cases'. Replication would see individual cases being used to corroborate specific propositions. Whilst a difference of opinion arises here as to the respective advantages and disadvantages associated with the use of single versus multiple case studies, a commonality relates to the potential for enhancement of understanding, if not theory development, through rich case description.

The value of 'pure description' as a potential knowledge or understanding enhancing form is here accepted. For Mannen (1979:520), description is the fundamental act of data collection in a qualitative study. For him *'.. the data developed by qualitative methods originate when a researcher figuratively puts brackets around a temporal and spatial domain of social world. These brackets define the territory about which descriptions are fashioned'*. In this present investigation this bracketed territory is *small business management and development activities and, 'such data are symbolic, contextually embedded, cryptic, and reflexive, standing for nothing so much as their readiness or stubbornness to yield to a meaningful interpretation and response'* (ibid:521). However, as explained earlier at the research design stage, the approach within this study is founded upon allowing the research to flow from a build up of base guiding insight from a 'bootstrapped' literature base to the data and insight of the world of small business practice, looping back into reconsideration of the extant literature, back again to the data and insight of case investigation and forward into conceptualisation (and, potentially, theory development). This process effectively constitutes deductive-inductive-deductive-inductive sub-processes of research activities. It is based upon acceptance of the non-existence of adequate informing theoretical and conceptual frameworks in the focal area of the study.

The 'bootstrapping' process in its totality has, however, revealed the partial foot holding frames of insight which provide sufficient guidance to facilitate the transcending of pure descriptive process to what is effectively a process of *descriptive analysis* that produces a build up of 'rich' 'thick' description of the case study small businesses under investigation that includes elements of 'relationship reporting' with regard to the teasing out of base understanding of the determinants of particular areas of small business management or development activity.

(b) the build up of 'fractured-in-context' analysis

Having revealed an overview of the contextual development of the participant case study small business, the resultant contextual insight provides the holistic frame for the undertaking of 'slice' analysis of specific key phenomena within the small business whole. Because an observed phenomenon or behaviour remains meaningless until an in-context description of that observed phenomenon or behaviour is made, and with an attempt to visualise it from the perspective of its originator (Van Mannen, 1979). Within the parameters of this study, this involves fracturing-out areas of ICT activity occurring within the business to consider how such technology is embedded within strategic and/or operational activities of the firm. Both facilitating and constraining elements relating to the small business uptake and utilisation of ICT and the Internet are teased out through consideration of their development roles and inputs, or lost potential in this respect.

The total contextual insight of the descriptive analysis is used to provide a 'total frame' within which to 'fracture' that insight into discrete areas of understanding. Thus, elements of discrete 'fractured' areas of IT activity are 'induced' from the 'grounded' insight provided by the descriptive contextual analysis. In effect, this constitutes a categorising strategy whereby, as an integral part of qualitative analysis, the categorisation is represented as coding (Maxwell 1996). And within this study such coding activity is undertaken by 'fracturing-out' key areas for a more in-depth in-context consideration. The coding categories are inductively developed during the actual analysis, and thus grounded in the actual case study data (Strauss and Corbin 1998). This involves the 'fracturing' of data and insight with its manifestation in a

rearrangement into categories that facilitate comparison of the insight within, between and across the categories; and across the different case studies.

Within this study, the fractured analysis is never isolated from its developmental context, facilitating a 'fractured-in-context' examination of the categorised ICT activities within its specific small firm context; and the comparison of those ICT activities across the different small business development contexts within which they are unfolding in each of the participant case study firms.

(i) An In-depth Analysis of the Internet-specific Strategy building process

In order to understand the level and depth of the use of the Internet by the case study firms this study further breaks down the Internet use for commercial purposes by those firms. In this context the study adapts an analytical framework built on Angehrn's ICDT Model (1997).

As discussed in chapter 4, for Angehrn (ibid) any technological innovation has at least two phases of development: firstly, a building up that is an immature phase. At this phase the new technology is applied at random without understanding its true potential and is therefore accepted without any clear strategy. In the next stage, which is called the 'mature phase', applicants want to see some 'measurable' return on their investment and therefore develop, or at least try to develop, a strategy to align the technology with specific business objectives and values in a systemic manner. In the context of the Internet this first phase is its application as a cheaper fax or telephone answering machine which has been observed by many researchers.

The ICDT model classifies the Internet strategies for the above second phase of this 'technological innovation'. That is to say, get an insight into the transformation of the existing products/processes, organisational activities and procedures on the advent of the Internet.

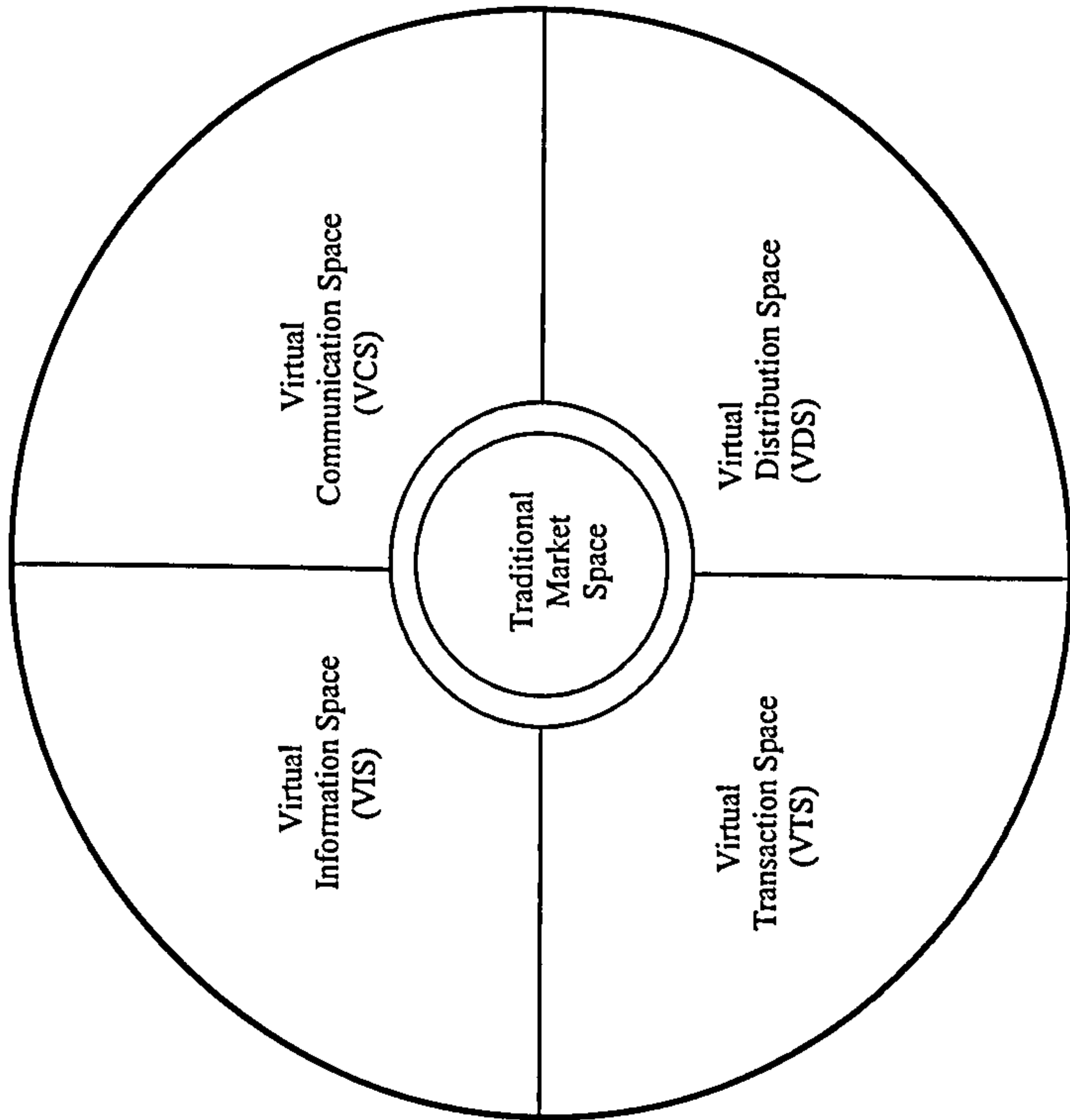
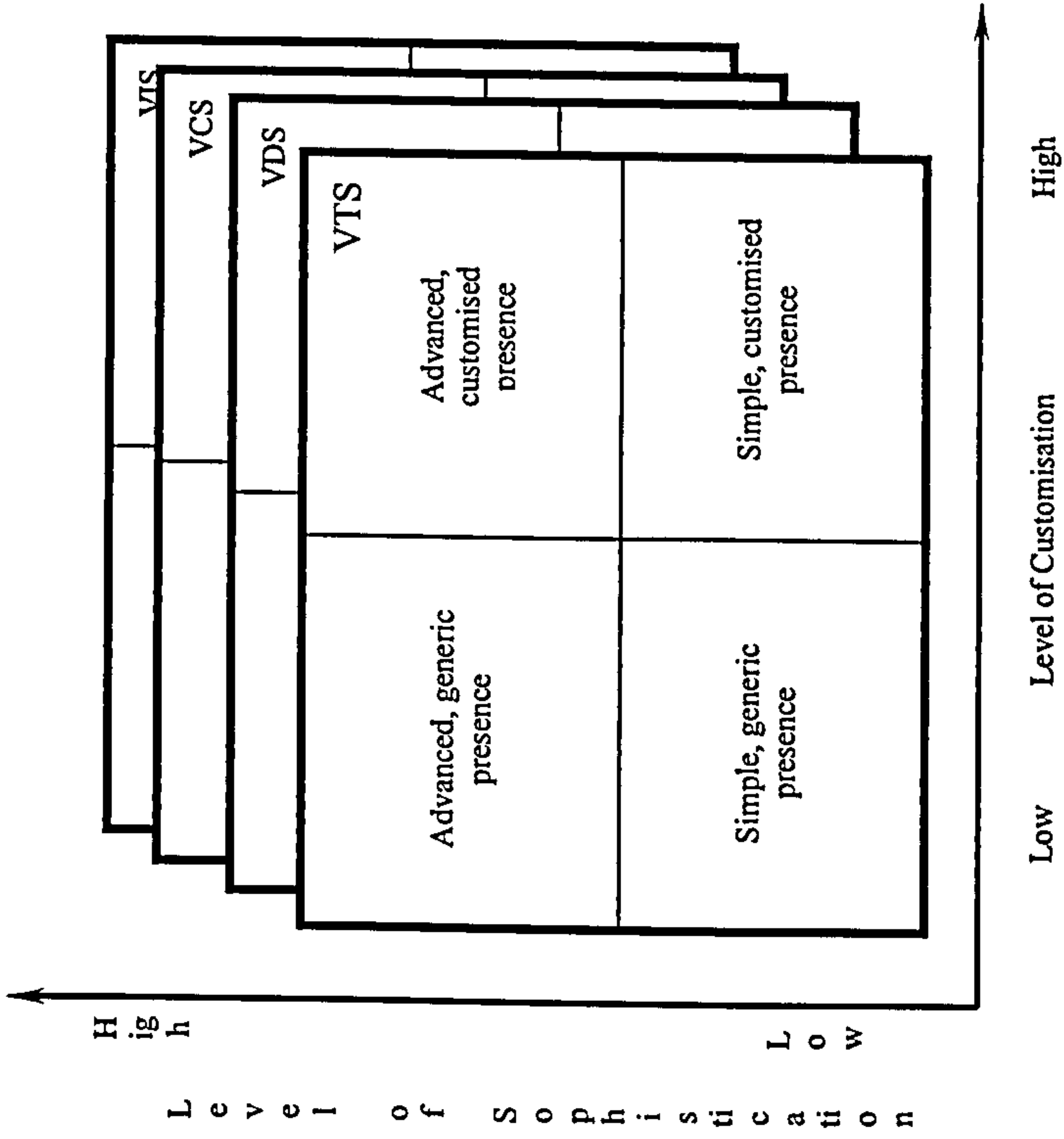


Fig- H: The ICDT Model

(ii) The ICDT Model: The Four Dimensions of the Internet Presence:

The ICDT model is based on the concept of spacial transcendence of the traditional market space into a four-dimensional virtual space. Angehrn (ibid) describes those four spatial spreads as: (1) Virtual Information Space or VIS (2) Virtual Communication Space or VCS (3) Virtual Distribution Space or VDS and, (4) Virtual Transactional Space or VTS.

For Angehrn(1997:364) the VIS space increases *'the visibility and improving'* of *'the perception of products and services through Internet-based marketing or advertising initiatives'* and the VCS space increases *'the visibility and improving'* of *'the perception of products and services by monitoring and influencing how economic agents communicate about them and their competitive environment via the Internet'* . The concept of the VDS involves reducing *'the cost, improving the quality, or innovating products or services by distributing them, or parts of them, via the Internet, or by using the Internet to distribute related, auxiliary services'*. The VTS reduces *'the cost, improving the quality, or innovating products and services by exploiting the Internet for product/service-related transactions'*.

Each dimension of the model could be classified further in the terms of its 'technical sophistication' in order to gain further insight into the level of the Internet penetration from simple to advanced levels of its application within a framework built on a two dimensional frame of reference of levels of 'sophistication' and 'customisation' respectively. The quad-spatial ICDT model with summary descriptions of its four spaces and the quad-spatial strategy analysis framework is presented in Fig –H on the previous page.

(c) process of re-contextualisation

Having teased out depth of small business ICT insight within a perspective of 'fractured' focus, the findings are then re-contextualised in terms of consideration of (a) the extent and non-extent of coherence of the small business development activities and the facilitating effect of IT/Internet usage; and (b) the existence of

innovative, creative strategic and operational developmental activities, and the extent to which this potential exists but is not currently exploited (including the potential for organisational learning orientation and the facilitating inputs of ICT).

(d) matrix-based comparative analysis

The final component of the case study analysis involves matrix-based comparative analysis. The key features of insight derived from the other analytical sub-processes are integrated into a matrix representation of those features for each participant small business to facilitate comparison and unfold understanding of commonality, similarities and differences with regard to ICT uptake/non-uptake across the case firms. Internal and external contextual factors which limit the small firm uptake of ICT are highlighted alongside identification of areas of further potential for such uptake.

Chapter Seven

*The Case of
Hanwell Instruments
Limited*

CHAPTER SEVEN

CASE STUDY ANALYSIS: CASE OF HANWELL INSTRUMENTS LIMITED

Hanwell Instruments Ltd. Hertford, Herts.

Part One:

Descriptive Analysis:

Introduction:

Hanwell Instruments Ltd. was launched in 1986. The organisation was the brain child of the owner manager Dr. Martin Hancock.

On acquiring his PhD in electronics from the University of Essex, Dr. Martin decided to start his own business having identified demand in the market for quality data logging equipment. He was able to locate this gap in the market during his University days.

Dr. Martin launched his business alone from its current Hertford site. He later took on Mr. Richardson as his employee who is at present the acting General Manager of the firm reporting directly to Dr. Hancock. He also holds a small stake in the company.

Hanwell's Industrial Sub-sector:

The firm operates within the 'electronic data collection and storage' market sector. This is a narrow market sector within the industrial electronics industry. The firm's core speciality is the design and manufacture of data logging equipment for measuring, acquisition and storage of data on environmental parameters such as atmospheric pressure, temperature and/or humidity. In this context this industrial sector has a worldwide market for its products. The market is open for competition and is competitive as, worldwide, several manufacturers are operating in this sector at present. Through its high-level design and manufacturing skills of quality products Hanwell Instruments has been able to establish itself firmly within this sector within a short period of time because the firm has market demand for its products that spreads from reputed home customers to overseas clients from the United States to as far as Hong Kong. The demand for its products is still growing. Small but steady growth of the firm in current years is indicative of growing demand for its products. Like most other areas of the industrial electronics sector this sub-sector is protean in terms of new developments and inventions. It is impossible to visualise the future sector development trend even in the immediate. The electronic industry environment is best described as one experiencing open-ended change situations in terms of unknowability and high unpredictability. The firm has well recognised this and it is reflected in its behaviour towards its customers and responses to market demands. The firm does not have a formal long-term marketing strategy because in this situation it is not possible to maintain one. Instead, the firm continuously monitors the market and assesses "where we want to go next".

The Company's Products and Markets:

The company designs and manufactures data logging, data acquisition and radio telemetry monitoring equipment. However, its core specialty is data loggers for environmental monitoring such as temperature and humidity. The products are all solid-state state-of-the-art intelligent machines designed and manufactured to withstand rugged handling and extreme environmental conditions. It is the mission of the company to offer "quality products at a competitive price" and some of the products are more expensive than the comparable devices available in the market but

the quality is much superior. The company maintains a list of 300 instruments for off-the-self delivery ready to be delivered within 5 days. It takes between 2 weeks and 4 months for completion of a custom-built product.

The company has established itself firmly as a quality datalogging equipment manufacturer both within the home and in the international markets. The UK clients encompass various museums, including the British Museum and reputed organizations such as Glaxo Welcome, the US Airforce and De Montfort University. The spread of the firm's external markets extends as far as the Hong Kong government in the far-east and to clients in the United States. The organisation competes on equal terms with other native data-logger manufacturers in the United States.

Drawing upon the work of Minzberg et.al. (1998) it is possible to determine that Hanwell has created a distinguishing competitive posture along two dimensions: firstly, it distinguishes itself in the market place in the perception of its customers and potential customers via a differentiation strategy utilising a combination of high quality (within a context of quality as 'fitness for function' as perceived by the customers); and a parallel scope strategy focusing on specialised market niches in customised products.

People as Resources:

- *Employees:*

By the year 2000 the employee-base had reached 17 workers. However, a retrenchment saw this reduced by six employees, including a director. The redundancies were not for any financial reasons, but rather due to internal conflicts and culture clash, this portraying a political (or power) dimension to the development of the firm.

Currently, in addition to Dr. Hancock and Mr. Richardson, there are nine permanent employees and one part-time worker. The workforce includes a sales manager, an accountant, a test engineer, a stock controller, a despatcher and shop floor employees.

The main strength of the organisation lies with Dr. Hancock. He designs all hardware and designs, writes and codes software for all the products the firm manufactures. This is supportive of those commentators who posit the owner-manager as 'pivotal actor' in small business development.

- *Reporting Structure:*

The organisational structure represents a traditional hierarchical form (see appendix). Although a formal reporting structure exists, the working environment within the firm is quite informal and most of the employees are allowed to make their own decisions as far as their day-to day activities are concerned. However, with regard to the major decisions such as new product development or expanding of market ventures, the decisions are made jointly by Mr Richardson and Dr. Martin. Occasionally the sales manager is also included for a feed-in of his opinion.

Drawing upon the literature critique of the classical school of management thought within which the concept of formal hierarchy of control is central (see Taylor, 1947; Fayol, 1949), at issue here is the extent to which the choice of traditional hierarchy within Hanwell nurtures an inward focus of activity or 'closed system' of operation. The relative informality of relationships and operational level freedom of the workforce suggests significant flexibility, though at the strategic level there may be greater opportunity to anchor-in on the learning inputs of a wider base of the firm's employees (Wyer 1998; 2000).

- *Education & Training:*

Other than Dr. Hancock, only the test engineer has formal education up to University level. Others, including Mr. Richardson, are educated to O-level or A-level standard.

The training policy of the firm is strictly "on the job training". For example, the test engineer has recently completed his degree, is quite young, in his twenties, and is gaining hands on experience in the electronics lab. A build up of capability and

experience through learning “on the job” forms the base training for the entire workforce.

To utilise its manpower effectively the firm trains its employees to acquire more than one skill. The employees are therefore trained to do more than one job in a multi-skilling approach, thereby contributing to an increase in overall productivity. For example, the sales manager is also responsible for chasing customers to recover monies from overdue and unpaid invoices

Production Processes:

The firm both designs and produces data-logging equipment, and telemetry systems for industrial monitoring purposes. A pre-requisite to many applications is a need for portability whereby the equipment is light enough to be held within the palm of the hand. This sort of equipment needs complex circuitry to enable it to be packaged within a small casing. The firm therefore uses surface mount device technology (SMD) along with the conventional integrated circuit devices which also provide cost advantages. SMD manufacturing is a specialised technology and needs considerable investment. The firm therefore out-sources the SMD element of the manufacturing while the conventional part of the manufacturing and the testing of the finished products are done in-house. In order to facilitate these two processes the company employs two assemblers and a test engineer and both processes are underpinned by an adequately equipped laboratory. The metal working processes as well as the manufacture of mechanical components are also sub-contracted out.

The production processes followed were developed over the years but have not changed significantly during the lifetime of the firm. The firm learned those processes through trial and error and through experimenting so as to minimise wastage in order to reduce production costs.

Here two key embedded issues are of high significance; firstly, in long-term strategic development terms, Hanwell seems to have had a clear sense of direction in terms of intention to build on existing core expertise to unfold future markets, products and processes activities. But integral to this has been an incremental development

dimension whereby process activities have been developed in the face of an unknowable technological environment by experimenting and 'trying out'. Secondly, the utilisation of sub-contractors to underpin some of the key process activities, requires abilities to effectively manage such network relationships whereby the sub-contractors are on the one hand motivated and nurtured to meet quality and delivery specifications and the other hand sufficiently controlled in this respect.

The main strength of the firm lies with its capability of designing complex electronics equipment. The main source of advantage comes from the owner-manager Dr. Hancock. His high standard of education has underpinned ability to design the hardware as well as undertaking the software coding and writing of the necessary software. According to Mr. Richardson "... he is the main supporting pillar of the organisation".

Finance and Financial Control:

The firm carefully avoids any borrowings from financial institutions. It is aware of the pitfalls of such involvement. High interest rates and the constant monitoring from the financing institution are, the management feels, an encroachment on their privacy and a source of loss of independence.

The firm hires the services of an accountant to look after the financial interests of the organisation. The management is also aware of the vital importance of cash in-flow. As discussed above, the responsibility of the sales manager is also to chase debtors in order to recover monies on outstanding unpaid invoices.

Although the organisation does not have a formal financial planning instrument in place, the above measures ensure the organisation does not face any financial difficulties nor has it any outstanding long or short-term debts in the market. Thus, whilst long-term rational planning methods of management are not evident within the firm, short-term planning in the form of financial control activities is a crucial base of the firm's success.

The firm's 'non-borrowing philosophy' provides it with flexibility of development in the face of periodic high interest rates and recessionary times which will not be available to many of its competitors.

Competitors:

The firm operates within a fairly competitive environment. There are a number of competitors operating nationally and internationally, within the same industry and market sector. The organisation successfully competes with firms such as Comark plc., Rotronics, Hobo, ACR, Comedian and Testo.

Unique quality oriented abilities of the firm have facilitated it remaining in business despite the many competitors. This is aided by a seemingly fairly good demand for the products the firm offers. Often competitor products within the market are cheap in price and lacking in quality. But the company aims at the top end of the market targeting a niche through the offering of quality products at reasonable cost. According to Mr. Richardson "we are expensive", but provide the total package which the niche customers want, thereby pushing back competition. This total package has been identified by the firm to include flexibility in approach to pricing within a context of a fast changing external operating environment (discussed below).

Drawing upon Porter's (1980) broad conceptualisation of what constitutes 'competitive forces' within a particular industry, it is possible to identify the threat of substitute products as an issue which Hanwell is managing with its quality orientation. Use of outside sub-contractors enhances the issue of the potential bargaining power of suppliers and the opportunity for Hanwell customers to exert high level bargaining power is a further potential competitive force impacting the firm's development. Porter's final dimension, threat of new entrants, is also an ongoing potential competitive threat to Hanwell.

Holistic Development and Marketing Activity:

Commencing with the design and manufacture of radio telemetry equipment for various museums the firm gradually expanded its business to other industries. It has

built this customer-base into shipping, pharmaceutical, warehousing, storage, shipment of goods, food and manufacturing sectors: that is "anything that needs monitoring".

With regard to future development, in terms of market and product range the organisation always follows a "very, very flexible policy". It is always looking into the environment for further opportunities. However, it does not have a pre-planned development strategy as in Mr. Richardson's opinion "let alone 2 years we look to the next day for an opportunity". This implies that although they do not have a formal planning vehicle in place their planning process is an ongoing one which entirely depends on unfolding of opportunities.

The management does not maintain a written plan of any kind for its future development, marketing or growth strategies. In the senior level meetings the key decision-makers put their agendas in writing but they are not in terms of long-term planning of any sort; rather they are a sort of day-to-day action plans or contingent action plans in the face of emergency. As outlined above, it appears that they use understanding of their current markets, products and processes activities as a frame of reference for unfolding insight into the relevance of external change situations as a basis for considering any internal adjustments in terms of markets, products and processes developments.

The firm looks for opportunities and tries to seize the first available opportunity to get into a market. In the context of the international market it is a 'market taker' in that when the pound becomes stronger it sells its products in the international market with a reduced profit margin. In this way it maintains a stable market share.

Inherent Marketing Approach: The firm does not have a coherent marketing plan as such. According to Mr. Richardson "we tend to sit down and think about where we want to go next. We look at the market and decide whether or not we can design a product for it then we decide whether we can be competitive or not. When we think 'at least we can be competitive' then we design it, do it, advertise it and get out and sell it".

The firm then goes elsewhere to find a market so as to sell that product for at least the next 2/3 years.

The firm's marketing strategy is "enquiry driven". Depending on customer's demand the firm looks into gaps in their product range and designs the product to "fit the market".

Management's real concern is the exchange rate, as the firm has a sizable market share in the United States and in continental Europe. So, a stronger pound leads to the possibility of a slimmer market share which the firm compensates for, as discussed above, by reducing the price, thus compromising profit. This strategy helps the firm to gain a competitive edge over her competitors as most of them are not prepared to sell at a reduced price when the market situation so demands.

Effectively, then, Hanwell adopts a '*from somewhere*' (Stacey 1990) developmental planning approach whereby its existing core of markets, products and processes activities forms the focus for directing the firm forward. This rather than a '*to somewhere*' explicit rational long-term planning approach with a pre-determined long-term development path. Such a management approach is its mode of operation for dealing with a highly uncertain change environment. Moreover, a further flexibility element built in the firm's philosophy is that willingness to utilise price reductions as a tool to counter the volatile fluctuations in the pound.

The firm has more or less followed the same marketing strategies since its launch. Although it is experimenting with new marketing channels such as the Internet, it still firmly believes in traditional marketing methods.

Product & Price: The firm's marketing strategy is to offer a quality product at a competitive price. But focus on a premium niche offering. The above discussed flexibility in pricing approach is a key competitive tool.

Distribution: In order to achieve the above, the firm *directly* supplies to its UK customers and where possible to its wider geographically spread customer-base. However, it maintains a chain of 20 distributors worldwide in order to distribute its

products and after sales services smoothly and efficiently in a timely manner. Again (as with sub-contractors) the issue of managing network relationships is a key dimension of the firm's smooth development.

Promotion: The firm uses technical magazines for advertising purposes, it also uses a pre-paid card system in order to generate product inquiries. The firm utilises mail-shots to existing customers to keep them in the picture about its latest product developments and services. The company participates regularly in national and international trade exhibitions and industrial fairs to promote itself and display its product ranges. For example, it participated in a 'Trade Fair' in Germany in July, 2001. The organisation also maintains a well-designed Internet portal with information on, and specifications about, its products and services ranges available worldwide. For sales promotion purposes it also distributes various gift items, such as pens and mouse mats, with its name, telephone number and web address on at those fairs as well as to its existing customers.

Market Research: The organisation does not have any market research instrument as such in place, nor does it undertake any formal short or long term planning. In Mr Richardson's view" they are too expensive".

The organization learns deriving feedback from its customers and from advertising campaigns and analyses this. It currently concludes from this process that demand in its market sector is for a quality product at a competitive price, and builds up a clear picture as to just what constitutes quality with regard to a given customer requirements.

The management is aware of the fact that to stay in business it is vital to monitor the developments occurring in its industrial sector. The firm therefore maintains a watch for the latest product/services its competitors offer. This the firm does by learning from insight from the traditional advertising channels such as trade magazines, technical articles, trade fairs and so on.

Communication with external environmental agents is also effected by the firm's use of both traditional and new technology communication media, for maintaining contact

with its customers, suppliers, sub-contractors and other business agents. It uses telephone, fax and e-mail for communicating purposes.

Use of Information Technology:

The organisation has utilised computer facilities since the early 1990s. At present it copiously uses a stand-alone desktop version of PC platform for both administrative and for design and manufacturing purposes. According to Mr. Richardson, they use computers in almost all possible applications. PCs are used for accounting, stock maintenance, pay roll, desktop publishing, for administrative purposes and for manufacturing and R&D applications such as circuit/PCB design, CAD design, and engineering software coding utilising standard software application products in the market.

Seemingly none of the present employees are formally trained in IT technology. However, the organisation strategy of on the job training has to date been effective. The employees are encouraged to learn various IT applications. And it seems that they accept the offer most willingly. So far there has been no an objection or resistance from the employees to this arrangement.

Internet Use: The firm has had a web presence in the http/www portal format for the past 3 years. The web site is mainly used for advertising the company's product/service ranges and for communicating their technical specifications. It also provides a list of the firm's distributors available worldwide and contains some information about the organisation.

The firm uses the web site for accessing its supplier's web-sites to facilitate search for components. Mr. Richardson feels that in this regard "it is a very good tool" while the "search facilities are very good". He also thinks that the Internet contains "a lot of rubbish in terms of information". In his opinion, some of the content is "dubious" and the Internet needs "some sort of regulation" for advertisers so as to safeguard customers from "dubious vendors and advertisers".

The firm also uses the web for "information gathering" about competitor's products, market demand and other business related information. As a financial management facilitator, the web connection is used for on-line banking such as paying salaries to employee's respective bank accounts. However, the Internet is never used for financial transaction processes nor is any financial information exchanged over the net.

The decision to connect to the net was entirely Richardson's. The web site was designed by Richardson. It appears that he is very enthusiastic in this regard as he bought a web design software package and taught himself the design techniques "in just one weekend". At present Richardson maintains and upgrades the company's web-site as and when needed.

The organisation uses BT CONNECT as its ISP. It pays £40 per month as subscription charges, which includes four web surfing licenses and 76 email addresses. Richardson thinks these restrictions prevent unnecessary surfing of the web by other employees thus preventing wastage of valuable man-hours. The employees have their own e-mail addresses which they can freely use on job-and business-related activities.

Due to the vastness of the web information Mr. Richardson feels the necessity for a regulatory body and a web directory. The organisation is at present registered with a web directory: Applegate Directory. This entry is free of charge. Richardson previously tried other directories with a subscription charge. The charges, £500 per pack per annum, are considerable in his view in relation to the number of queries they generate and the minimum number of packs he needs to realistically subscribe to. He found that on average only 5 queries were generated by each pack, out of which only 2% generate business in real terms.

The owner manager feels that the presence on the web and email facilities have not increased or improved the competitive posture of the firm significantly, nor does it generate much business for the company. In Richardson's view, this is due to the absence of indemnity against loss for doing business on the net, as well as mistrust among parties in using the net as a media for business. He explains further that, despite his firm's presence on the web with a e-mail hotline, most of his customers

still use fax and phone as a service or product enquiry. The proportion of e-mail queries are only 20% compared to fax and phone queries.

In the context of marketing and selling, IT has not contributed much by way of improving performance in these areas. The firm has been unable to sell a single product over the net.

The e-mail is mainly used to communicate with the overseas distributors in terms of exchanging information and sending physical information about specific products, especially customised products. It is also used for communicating with customers, sub-contractors and suppliers.

Part Two:

Fractured Analysis of Discrete Areas of Hanwell's Key IT/Internet Activities Using the Overall Holistic, Contextual Insight of the Descriptive Analysis as Analytical Context

Approaching the case by considering IT and the Internet within total holistic contextual processual development of the firm reveals how such technology is embedded within both the strategic and operational activities of the firm, and may be making a significantly higher contribution to the sustained competitiveness of the business than the owner-manager/general manager's isolated consideration of the Internet conveys. Both the facilitating and constraining elements relating to the firm's uptake and utilisation of IT and the Internet have been teased out through consideration of key facilitating development roles and inputs.

Utilizing the total contextual insight of the descriptive analysis it is possible to 'fracture' that insight into discrete areas of understanding. The following discrete 'fractured' areas for focus have been 'induced' from the '*grounded insight*' relating to the case investigation of Hanwell.

'Fractured' Insight:

(a) Information retrieval vehicle:

Drawing upon learning theory (Ayrgris and Schon 1974; Hawkins 1994; Stacey 1990; Wyer, Mason and Thoedorakopoulos 2000), it is possible to provide tentative conceptualisation of Hanwell's 'strategic development activities' in terms of how the firm deals with its highly unpredictable and unknowable change environment. One assumption underpinning the learning process is that the firm does not receive external information in closed absolute form, rather we as individuals (and thus also Hanwell) receive facts or insight as an external stimuli - but the firm does not react to the external stimuli, it responds to its interpretation of that stimuli (Child 1970). One key input of the Internet for Hanwell has thus become its utilisation as an 'information retrieval vehicle'. The firm picks up facts and insight in the form of external stimuli and then works through the significance of that insight for the Hanwell markets, products and/or processes context. Importantly here, is the need to view the Internet as information retrieval vehicle as a first stage input into an organisational learning process - that is to say, the facts and insight the Internet provides have to be contextualised in the specific small firm context and analysed in terms of significance and basis for informing strategic or operational adjustment to the firm's activities.

(b) Method of communication with customers:

A central management philosophy within Hanwell is the identification and maintenance of distinguishing competitive posture in the marketplace as perceived by its customers. Again drawing on the organisational learning process, the effecting of the scope and differentiation strategies which underpin the distinguishing posture requires close interface with existing and potential customers to build up understanding of requisite differentiation activities (including a picture of quality specifications in terms of customer perception of quality as 'fitness for function') and of which constitutes scope in terms of identified market niche or customised provision. In this respect, Hanwell utilises the internet to build up understanding of customer requirements, including confirmation of understanding of product specification requirements. The extent to which the potential of the Internet is fully

utilised from a market/strategy development perspective in this context does, however, require qualification: seemingly Hanwell management continues to prefer to use traditional marketing method and modes of operation: for example, for environmental purposes the firm still utilises all the possible media available, including traditional media such as magazines and pre-paid card systems, alongside traditional communication channels such as fax and telephone to communicate with its environmental agents like customers, suppliers and distributors.

Integral to this 'big picture' is the firm's inability to fully visualise the potential of the Internet as an instrument for organisational learning: for example, the opportunities associated with possibilities for Hanwell to create data-store of information with regard to all environmental players on the boundaries of its activities was not considered.

(c) Control instrument with regard to the firm's distribution network:

A management paradox with regard to Hanwell's effecting of sustained strategic development is that of allowing those involved in the firm's distribution activity sufficient freedom to offer the quality service provision Hanwell seeks for its customers, whilst simultaneously exerting adequate control over the process. In this respect the firm utilises the Internet as a partial control instrument in maintaining its chain of 20 worldwide-based distributors

(d) Mode of interface and control with regard to the firm's sub-contractors:

Again the above discussed management paradox comes into play. This time within a context of quality of input into Hanwell's value chain of activities (with an ultimate output form in the distribution context). Hanwell's sub-contractors require flexibility and space to 'produce' to specifications, including a flexibility derived from clear communication by Hanwell of its product specifications. In parallel, Hanwell is looking to exert effective control in this respect and, in terms of timeliness of actual delivery of the quality product into Hanwell's production process the Internet is utilised to accommodate interface and control with regard to sub-contractors.

(e) Financial management tool:

Hanwell effectively utilises the Internet to underpin on-line payment of salaries and wages. Owner-manager values and attitudes constrain fuller potential utilisation in terms of firm-customer transactions, firm-supplier transactions and firm-distributor transactions. The underlying constrainer in this respect is the owner-manager's psychological stance regarding perceived risk.

(f) People management vehicle and employee learning tool:

Hanwell utilises IT in a people management context in two specific ways. Firstly, it is used to underpin the effecting of timely payment of wages and salaries. Whilst timely payment is a taken-for-granted within large companies, it does not always run smoothly within small operations: drawing upon Herzberg's Two Factor motivation theory (1966), this utilisation of IT and accompanying on-time payment does not necessarily act as a 'motivator'; but non-existence of reliable on-time payment would act as a severe 'demotivator'. Secondly, employees of the firm are allowed to use the Internet for purposes as defined within the domain of their immediate job responsibilities, thus enhancing operational activities. Beyond this, however, only senior managers are beginning to exploit the Internet toward comprehensive organisational learning activities (employees being restricted to sending/receiving e-mails).

Although this restriction is comprehensible on the grounds of wastage of man-hours and increased cost of communication due to 'casual web-browsing', opportunity is missed to anchor-in the learning capabilities of base employees, who may be best positioned to pick up on Internet-based insight as feed-in to the organisational learning process.

Indeed, in the context of the internet related skill-set that the employees could develop, this may be interpreted as restriction which severely undermines the firm's 'on-the-job' training policy.

(g) 'Information board' for potential customers:

The firm has been using the Internet as an advertising media for the past three years. This facilitates outward communication to potential customers of indicative product types and product characteristics and specifications relating to Hanwell provision. But inward return communication enabling potential customers to seek greater detail of 'service' type and levels offered by Hanwell and of the firm's ability to act as a 'true partner' in the solving of customer's problems, is not facilitated by the manner in which Hanwell uses the Internet as a somewhat narrow 'advertising tool' rather than in a more interactive marketing oriented way.

(h) Change monitoring tool and 'technology tracker':

Within the context of the firm's highly unpredictable and fast changing environment, Hanwell does use the Internet to assist in monitoring change and to a limited extent to 'track' technology and technological developments.

However, the firm's understanding of the Internet as a strategic development tool and of facilitator is limited. It appears that the firm's inchoate understanding of the Internet's potential business applications is the root cause behind its somewhat myopic view of the strategic development and learning input the Internet can offer. In this context, a view of the Internet as a farrago of information indicates the company's shortcomings with regard to its ability to utilise search engines and other applications properly and effectively. Underpinning this situation is a lack of both experience and learning.

The effect of interaction between the Internet and Hanwell's organisational activities is depicted in a matrix as shown on Fig-I.

Part Three:

Re-Contextualising Analysis: Recontextualising the Fractured Insight

Having teased out depth of insight within a perspective of 'fractured' focus, this section recontextualises the findings in terms of consideration of (a) the extent and non-extent of coherence of the small business development activities and the facilitating effect of IT/Internet usage and (b) the existence of innovative, creative strategic and operational developmental activities, and the extent to which this potential exists but is not currently exploited.

Re-Contextualisation of the Case

1. Maintaining coherence and consistency of existing provision (i.e. existing markets, products, processes activities):

Literature on small businesses states that in most cases personal goals and/or aspirations act as stimuli to launch a small business.

This applies to Hanwell Instruments. Dr. Martin's resolve to independently earn his own living acted as a stimulus for the inception of the firm. It further emerges that the owner-manager was able to locate a niche within the data-logger market and utilised this opportunity to diversify into this market. At present, there is a worldwide demand for the equipment Hanwell manufactures and, obviously this market potential entices other organisations to enter into this market segment.

Hanwell's success in differentiating itself by offering quality products helped it to establish itself in the market within a short period of time despite its small size and with the existence of inherent smallness related problems. Apart from manufacturing quality products the firm focuses on customisation. On the other hand, it's SMD based hand-held and rugged product-line reflects its manufacturing flexibility to appease market demand. So the firm follows a novel strategy based on the premise of offering 'made-to-measure' products with above average quality. This innovative approach to create a market for its products is underpinned by its technical and manufacturing

capabilities and success in these areas becomes the focus in terms of a cohesive and consistent provision with regard to markets, products and processes activities

Hanwell was born out of its owner-manager's desire to achieve something. The firm adopted a flexible approach to deal with its competitive environment while it is innovative in developing a unique and successful product strategy to create a niche within its market space that has led it to achieve competitive edge over its competitors.

The emerging picture of Hanwell thus depicts the activities of an innovative small firm operating within its labile milieu. The firm operates within a high-technology market sector. In this context, it is conceivable that Information Technology (IT) is part and parcel of Hanwell's organisational activities and that IT is well integrated within its organisational culture. This presumption is only partially true. The firm possesses a number of up-to-date IT equipments along with various applications software that are sufficient to support its current activities. The use of this equipment however mostly focuses on certain internal applications. Moreover, not all employees are adequately trained to operate this equipment.

On the other hand, despite the presence of these attributes, Hanwell possesses a potential weakness. It appears that the firm does not possess any significant marketing process or activity which is based on a conscious consideration of how traditional marketing methods can be complemented and supported by ICT approaches.

Arguably, opportunity exists for an integration of marketing activity which is complemented by an IT policy. Indicative of such an opportunity is:

- (i) Use of the Internet and the W3 to make the firm more visible and coherent in order to entice potential customers and to provide a unique corporate image. That is use of the Internet and the W3 as a marketing tool which either supports or replaces current traditional modes of marketing efforts.
- (ii) Utilise the W3-site more seriously to explore overseas markets for potential customers and to discover new opportunities.

(iii) Use the Internet to create a network with its business partners for exchange of ideas and views.

(iv) Explore the possibility of using the Internet as a channel for interactive dialogue with its existing customers so as to understand their requirements and to provide on-line support.

2. Effecting strategic adjustment to existing markets, products and processes activities:

Hanwell's internal environment: Investigation into Hanwell's organisational activities divulges that the firm has internal strengths along with some inherent weaknesses.

The firm is successful and has a steady growth rate where the owner-manager's personal virtues act as stimuli. This apparent success story overshadows the hidden dangers of its weaknesses. As described earlier the firm has very little formal marketing activities designed to balance or reduce a current 'enquiry driven' dominance. While on the other hand, it has a policy that inhibits learning activities.

Seemingly, the owner-manager's technically competent mind has focused on "increased productivity through minimising wastage in man-hours". This strategy, in turn, stymies Hanwell's organisational learning process. The owner-manager's technically excellent mind overlooks the importance of marketing and the existence of explicit marketing strategy in the real world of business and competition. In the final analysis, Hanwell's seemingly ad-hoc marketing approaches may prove an inherent weakness of the firm which could undermine the firm's survival in the long run.

Importance of an information based marketing strategy: The case of Hanwell divulges that a hiatus exists between the firm's marketing practices and a formal marketing plan. Though formal traditional marketing plans and rational marketing planning processes as depicted in mainstream marketing literature may also be at odds with the informalities and idiosyncrasies of Hanwell's small business characteristics. What Hanwell lacks is a marketing strategy based on the premise of the information

technology because to survive and to achieve its organisational goals in a turbulent and unpredictable environmental situation an organisation needs to be well acquainted with the occurrences in its surroundings. The success of a firm in such a market context demands generation and analysis of information based on data gathered from both internal and informed external sources.

To create such an information oriented marketing construct, however requires, according to traditional marketing literature, an elaborate planning process to be spread over a long period of time while the formulation process demands the focus and competency of an experienced management team. The question naturally arises whether such resources exist within Hanwell and above all whether such a formal long-term process is compatible to a firm like Hanwell.

From the analysis of Hanwell's activities it can be seen that in reality the firm is void of any rational long-term planning process within its organisational activities. The management of Hanwell adjusts and re-adjusts the firm's activities on an almost daily basis. The case further reveals that the firm behaves as an 'opportunist' in order to carve out a slice of the market. To sell its products it behaves unscrupulously in the creation of a market space so as to reach and cater to as many customers as possible.

Hanwell's management effectively focuses on a 'from somewhere' strategic approach in terms of developing its markets and organisational activities. Such a mode of operation is successful in an intensely volatile and unpredictable environmental situation. In fact, the nature of Hanwell's operating market space is itself dictated by today's evolving high technologies. This changing face of high technology in turn makes the whole associated market sectors unstable and unpredictable. Within such a changing and evolving market environment it can be argued that the only possibility is for a marketing process formulated on the premise of flexibility with a 'short- time horizon'. Moreover, the success of such a marketing concept inherently depends on scanning of various internal and external sources for data and analysis of these scanned data for information while 'warehousing' those data/information electronically: At issue, therefore, is the effecting of an appropriate balance whereby informal management processes are effectively served and supported by evolving ICT applications.

Importance of market research for information: In Hanwell potential exists for implementing a market research process for gathering data followed by extraction of useful information therefrom. The process may be anchored to a strategic thinking of 'where to go' which may be based on the premise of the firm's goals. This anchoring is necessary to differentiate between 'what information to keep' and 'what to discard'. This 'where to go' orientation may, however, build more effectively from a continued 'from somewhere' strategic development focus: that is to say, the unfolding of understanding of future development paths may centre upon the anchoring of external change information which helps Hanwell continue to focus upon its current successful markets, products and processes activities and work out the implications of the external change for those current activities. In this way ICT is anchored to improve the ways in which Hanwell unfolds its future development paths_ not by attempting to plot some pre-determined long-term development path into an unknown future.

From the perspectives of Hanwell's organisational attributes, abilities and resources it is appropriate for management of the firm to focus, for information, on their close business associates, competitors and other immediate actors who have some direct influence on or understanding of its activities.

The usefulness and success of such a 'contextualised' marketing construct depends entirely on the ability of the management to recognise useful data and their ability to extract required information (discovery) therefrom and its ability to re-adjust (implementation) markets products and processes accordingly.

Focus on Hanwell, with its present void of formal strategic processes suggests the above construct has the potential as the first stepping stone in semi-formalising its organisational processes in the context of its position within its environment and of explicitly linking small business strategic development to an organisational learning dimension of management.

3. Organisational learning: A key to strategic development processes:

Drawing on the evolutionary economics school (Nelson and Winter, 1982; Rosenberg, 1982; Dosi et. al., 1989), development of an organisation can be seen from the perspective of biological growth. From the viewpoint of this school of thought, analogous to biological organisms, survival for an organisation is an incessant struggle amid an inhospitable milieu. Within struggle for survival, and against immense odds, learning is the only way to effect survival which in the end builds out of, and on, experience and knowledge of the past.

For Argyris and Schon, (1974); Pedler et.al., (1999) and Senge, (1990), learning itself can be described as processes through which organisations acquire knowledge and experience to support their processes of survival and growth.

Learning is a vital element for organisational survival: On the premise of the above it can be argued that one of the essential elements behind the survival and success of an organisation depends on its ability to learn from its surroundings. Based on this proposition it could be said that Hanwell has certain mechanisms embedded within its organisational culture that facilitate learning from its environment. Hanwell's success story shows that to some extent it has managed to contextualise its process of learning in terms of its own markets, products and processes relative to its operating environmental domain. One example of such learning is its shift of business from telemetry to the data logging market. Therefore, in order to continue their success stories into the future it is imperative for firms like Hanwell to review their learning processes in the context of evolving information technology, especially the Internet, so as to re-adjust their organisational processes to ensure that ICT becomes an 'enhanced learning tool'.

Commitment of senior managers towards organisational learning: For some academics, organisational learning occurs at the base employee level because in an increasingly dynamic and unpredictable environment it is not possible to 'figure it all out at the top' (Senge, 1990). According to Senge a stimulus for learning comes from the leader in a 'learning organisation'. Leaders are responsible for initiating learning in

an organisation where its members continually enrich their knowledge and in turn their abilities so as to ultimately shape the future of the organisation.

Organisational learning is therefore pivoted around the mind-set and aspirations of senior managers. In cases of small firms such as Hanwell, this is extremely important because the organisational culture rotates around the owner-manager where he assumes the central influential role as a figurehead. For Hanwell, explicit understanding of the concepts of the 'learning organisation' and 'organisational learning' may see the owner-manager accepting the potential for the embedding of learning within everyday roles at management and employee levels.

Fostering an environment for successful organisational learning: It can thus be argued that it is the responsibility of the leader/owner-manager to create a climate within his/her organisation for learning. The initial stepping stone to initiate learning is to share the owner-manager's vision with the members of the organisation. The diffusion of the belief "his vision" is "our vision" can stimulate the freethinking of individuals, resulting in their raising questions about existing practices, procedures and norms of the organisation.

Formal consideration of the learning potential of information/internet technology might be anchored in to encourage independent thinking and to expression of ideas about new ways to use such technologies. It appears that in reality Hanwell is far from a 'learning organisation' not least because the internal climate is stifling to its members through constraints imposed upon them. Moreover, it is the mind-set and understanding of the owner-manager(s) that underpins the situation.

A change in mind-sets of owner-managers of firms such as Hanwell could see the Internet becoming a key-facilitator in furthering those firm's organisational objectives and future development.

Creating a climate for everyday learning: Removal of such restrictions on the use of the Internet would require Hanwell considering ICT as an investment and thereby release the repressed creativity and free thinking powers of its organisational members resulting in the birth of new ideas about the innovative use of the Internet in the

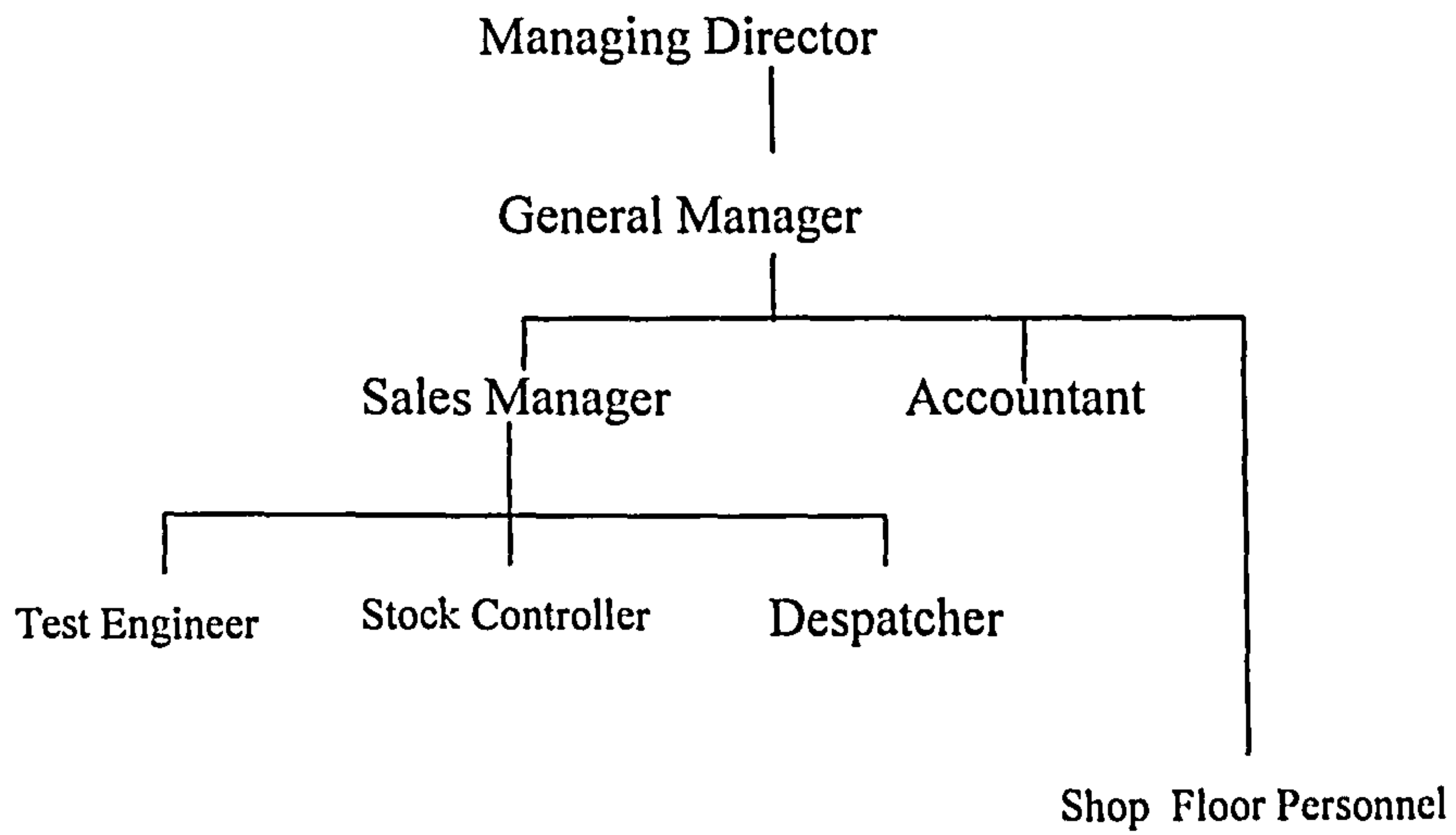
context of the firm's organisational activities. Real learning benefits would in the future offset the cost of such investment.

Such organisational freedom to use the Internet could, for example, create a climate for learning whereby the members would self-learn through experimentation from their everyday interface with the firm's various business partners via the Internet. The daily contacts with external business partners enrich the firm's knowledge base. This knowledge in turn helps the management to assess its present state of confusion about the application of the Net and enable it to build understanding of 'what to discard' and 'what to retain' in terms of scanned data and information and where to target for appropriate information.

APPENDIX - I

Hanwell Instruments

ORGANISATIONAL CHART



Chapter Eight

*The Case of
Cemac Limited*

CHAPTER EIGHT

CASE STUDY ANALYSIS: CASE OF CEMAC LIMITED

CEMAC Limited, Ware, Herts.

Part One:

Descriptive Analysis:

Introduction:

In partnership with one of his friends Mr. Craig Moorehouse founded CEMAC Limited in 1984. The original idea of the two founders was to design, manufacture and sell audio Hi-fi equipment. Their target market sector was domestic consumers.

However, within a couple of years they realised that it was impossible for them to penetrate the UK domestic Hi-fi market. They discovered that an influential cartel of powerful large organisations supported by various magazines and dealers/distributors was closely guarding this market segment by creating a high entry barrier to potential new entrants.

This unsuccessful venture became extremely stressful to Mr. Moorehouse's business partner and ultimately forced him to pull out of the business and the partnership for good. But Mr. Moorehouse persevered alone and pertinaciously looked for other possible market outlets for his firm's products. He was soon able to locate an interstice in the commercial security audio market with demands for security audio equipment similar to his firm's products.

The firm then quickly modified its products to meet the demands of this sector and in a short time was able to get a foothold. Over subsequent years Cemac Ltd. gradually established itself as a quality security audio equipment supplier.

CEMAC's External Operating Environment (Security Audio Electronics Sector):

The security audio electronics industry is a small market-interstice residing within the broader industrial electronics environment. Security audio products are designed for communication with customers across a security barrier. Such equipment is required by organisations whose activities involve transaction of money and/or valuables. Institutions like banks, building societies, railway stations, cinemas and theatre ticket counters are typical examples. The equipment is also used to scrutinize and control entrants to residential or office premises. This is a specialised market segment where almost all products are custom built to order. The nature and application of the products are specific and consequently demand is limited as well. This 'limited demand speciality nature' of the products narrows down the scope within this sector and, only a small number of firms thus operate therein. Due to relatively meagre market demand and limited scope, the environment is very competitive. Entry to the sector demands special technological skills and knowledge that in turn raises the entry barriers, but competitive pressures also derive from the need to keep up with the technological capabilities of existing competitors.

Cemac Limited has been operating within this market space for several years and has been able to establish itself as a competent firm. There are only two other firms operating within the sector who Cemac considers to be real rivals. Cemac now holds a strong position within its market despite the volatility of the environment.

The Company's Products and Markets:

CEMAC Limited designs and manufactures a variety of state-of-the-art electronic audibility systems for various banks, building societies and for organisations who transact with their customers through ticket windows (for example X02, X02-BDC or X02 ticket systems) or cash dispensing machines. For example, CEMAC produces

Cash Scoop and Electronic Speech Systems such as the X02 100/60 Flush System, the X02 Surface System or X02 Split level flush Systems. This X02 series was developed with the specific aim of installation in places where space is at a premium. CEMAC's product range also includes Audio Cash Scoop equipment incorporating a cash transfer facility and an audibility system 'all-in-one economic easy to install' unit. It also designs and manufactures Induction Loop Amplifiers using Static Induction Loop and wireless Mobile Induction Loop techniques. The latest addition to CEMAC's product range is an advanced microprocessor-controlled two-way fully duplex electronic speech system with enhanced sound quality and reduced feed back.

The core competence of CEMAC lies in its ability to design, manufacture and supply audio equipment. Today the technology has become sophisticated with the application of microprocessors. The market is also very competitive.

The firm found a niche within the market with demand for its products. At present the firm has a stable and steady demand for its products mainly from the financial sector. The organisation's customers are all UK based. It does not have any overseas customers.

The organisation does not maintain any off-the-shelf readymade products. It only designs and manufactures custom products according to its customer's requirements. The firm operates in a highly specialised niche market sector with a small number of loyal customers. Although the firm had a turbulent beginning, at present it has firmly established itself within its niche market sector as a quality audio equipment supplier and although small in size the firm is treated as a trustworthy and respected vendor among its customers. Quality, image and reputation are the key dimensions upon which the firm differentiates itself.

People as Resources:

- *Employees:*

At present the company employs 10 personnel. The number of workers has remained constant throughout the life of the firm. The workforce is comprised of the managing

director, one director-cum-company secretary and an installation engineer, with the remainder shop floor personnel..

- *Reporting Structure:*

Due to the size of the firm the reporting structure is quite simple or flat without a layer of intervening management between Mr. Moorehouse and the workforce. Moorehouse prepares the production schedules and all instructions come directly from him. The rules of the organisation are simple and clear and Moorehouse faces no obstacles in implementing them.

Mrs. Moorehouse is employed as a director-cum-secretary of the firm. She is responsible for the administrative functions of the business. The organisational chart in the Appendix reflects the organisational structure of the firm.

- *Education and Training:*

Other than Greg Moorehouse none of the firm's personnel has a university degree. Mr. Moorehouse acquired his degree in Electronics from Hatfield Polytechnic (now the University of Hertford) in the early 1980s. Danny Garman, the installation engineer, completed a course at the Trentford College in Wembley in basic engineering. None of the remaining workers have formal qualifications of any kind. However, in Mr. Moorehouse's opinion they are all skilled in their respective fields, experience they acquired through long engagement in their own lines of duty.

The firm has neither short- nor long-term training policies for its employees. The small size of the firm does not justify, nor could the firm afford to implement, such a policy. However, the firm does favour an 'on the job training' scheme. It also encourages its key employees to acquire more than one skill. For example, besides working as installation engineer, Mr. Garman learned about and looks after the web pages of the firm. This on-the-job learning process helps the firm to utilise its human resources more productively.

In the past the management contacted Business Link and hired consultants from various fields, including advisers on quality control (ISO 9000) and information strategy so as to improve its production processes and activities. However, the management was disillusioned with the advisers' performances and in Mr. Moorehouse's view *"the whole process was simply a waste of money"*.

Production Processes:

The firm designs and manufactures sophisticated security audio equipment for commercial use. Often it needs to be innovative to design and produce a system for a place where the space is at a premium. This needs skilful design of both firmware and the electronics.

To achieve this, systems are built in-house while some parts, especially metalwork items and components, are subcontracted to external manufacturers. The PCBs are also sub-contracted externally to PCB manufacturers. Components are hand assembled on the shop floor by assemblers. The firm only produces customised quality products in small quantities, therefore there is no need for investment in mass production equipment. Due to this small production volume the firm tries to buy-in components at a competitive rate. The firm uses a number of suppliers to supply a wide range of parts and components it requires. At present, CEMAC procures electronic components for its products from Anglia Components and Transonics Ltd.

Cemac's management has been following this production technique since it was founded and, due to the nature of its products and markets, Mr. Moorehouse finds no justification to change it.

Design and R&D: Mr. Moorehouse is responsible for designing the products, drawing on his qualified electronics engineer status and his skills-base built up through designing audio equipment over many years. The present reputation of CEMAC as a quality audio equipment designer is largely due to Mr. Moorehouse's ability to design complex audio systems. Take the owner-manager away from the firm and the business collapses.

Production Strategy:

The firm's core competence lies in its ability to design and manufacture sophisticated audio equipment within the parameters of specific customer requirements. The owner-manager thus works hard to interface and build trust with individual customers. Cemac started designing and manufacturing audio equipment for domestic users. Later it diversified to commercial audio equipment markets.

It appears that although the firm changed its market segment and customers it did not change its seminal products. Rather it often integrates available new technologies to upgrade its product range. For example, it utilised the microprocessor technology in some of its recently developed products to improve their performances and stay in line with external technological developments. Despite these recent developments it seems that over time the firm did not change its production strategies significantly, although core competence is underpinned by this technology integrating capability.

At the base level, after experiment and trial and error activities Cemac realised that the production processes it has been following over the years are most suitable to its internal and external operating environments.

Finance and Financial Control:

The turnover of the firm is around half a million pounds. Mr. Moorehouse manages the financial side of the business. He has an accountant to prepare the necessary paperwork and maintain the accounts of the firm. The accountant is not an employee of the firm but his services are hired on a fee basis.

In the context of raising finances for the firm, the management is quite apprehensive about borrowing monies from financial institutions. It is *"quite expensive to borrow"* money from financial institutions. The firm therefore strictly follows the strategy of avoiding borrowings altogether. In Mr. Moorehouse's word *"the firm is self-financing"*. The only financial liability the organisation has is the mortgage on its premises.

The reason behind this financial self-sufficiency of the firm lies behind its cash flow situation. The firm has never had to chase key debtors against unpaid or outstanding invoices. Almost all the customers are large financial institutions and they are prompt with their payments. However, in the past there were occasional incidents of debts written off due to customer declared insolvency.

Competitors:

As touched on above, from its present market position CEMAC feels that it has only two serious competitors within its operating market sector. Those firms are both indigenous UK organisations known as Contacta Ltd. and Claude Ltd.

It appears that the real threats from these two firms are their marketing strategy, which in Mr. Moorehouse's opinion is *"better"* than that of his own. The source of inspecting competitive advantage of key rivals may, therefore, be an ingrained ability to nurture effective monitoring activities

Holistic Development and Marketing Activity:

CEMAC Ltd. was launched to design and manufacture audio equipment for domestic consumers. It later diversified to commercial audio markets following its initial set back to get a foothold in the domestic audio market against strong opposition.

Over the years it gradually developed a niche audio product range for commercial consumers. At present the firm has a small but loyal and strong customer base. Most of her customers are UK based financial institutions or customers *"who need a ticket window or a cash dispenser"*.

The firm is small in terms of its size and its market share and, consequently the premises it operates from is modest in size. All the employees live locally. The firm is a family owned business where two family members, Mr. and Mrs. Moorehouse, work on a regular basis. When required their sons also lend their helpful hands. For example, their eldest son recently helped to design the firm's web page.

It appears that the working environment is quite informal and flexible. There is also no physical segregation between the work places of engineer, director and the managing director. This physical proximity also adds to the informality of the working environment. There is significant flexibility and informality on the work floor as well. For example, the management does not interfere with the individual worker's working patterns. Moorehouse prepares the requisite production plans, allocates jobs to workers and it is the responsibility of the employee concerned to complete his/her task(s) timely and in a proper fashion. This informal and flexible environment explains the firm's short lead-time for delivery of merchandise to its customers.

The management does not have a formal planning long-term vehicle in place nor does it maintain a written plan for its future development. However, the management takes decisions on a 'as it comes' basis. The uncertain and volatile operating environment of the firm does not allow it to plan ahead for the future. In Mr. Moorehouse's view *"in such an environment it is impossible to plan ahead"*. It appears that although they do not have a plan, Mr. Moorehouse makes his decisions based on analysing the present market, customer demand and customer requirement situations as focus for considering 'as it comes' issues and their implications for development. This guides him to decide the way internal adjustments are to be made in terms of procurements, production processes and the use of the firm's valuable resources. In an ongoing process, the management continuously reviews its business strategies and changes them in the light of its customers' change in strategic directions. For example, in Mr. Moorehouse's view the merger between the Lloyds Bank and the TSB, both customers of Cemac, had significant implications on Cemac's business strategy. This is because, as a merged conglomerate the joint venture has a procurement policy that is different from their individual ones. Also, the apprehensive continuous review process might have been triggered subconsciously by Mr. Moorehouse's early bitter business experiences. 'Business strategy' for Cemac could therefore be described as a 'mental process' phenomenon rather than written documentation in plan form

Seemingly, the management has no future plan to move, or expand, any further from its present position in terms of its market, products or organisational growth. It appears that Mr. Moorehouse is quite concerned about government rules and

regulations. In his view there are too many imposed industrial regulations acting as barriers to further growth of firms like Cemac in terms of their size, products, processes and methods.

In the context of learning, the management regularly meets and maintains contacts with its customers to discuss and learn about their requirements. It also learns from other delegates who attend the annual security exhibitions. Those leanings in turn enrich the firm's knowledge base and guide the management to make decisions on various matters.

Inherent Marketing Approach: In the context of marketing strategy, Cemac Limited neither has a short- nor a long-term marketing plan. In Mr. Moorehouse's words "*..they (customers) come up with plans and the company first assesses them, then designs them*". The management always takes the future on an "*as it comes*" basis.

It appears that the firm solely follows an 'enquiry driven' marketing strategy. It has a number of loyal customers and they generate most of the firm's business.

Since its diversification to the commercial audio market the management has been more or less following the same marketing strategy-that is, its dependency on its customer's enquiries for its businesses. The firm's success lies in its commitment to offer a wide range of quality products at competitive prices to its customers. It also follows the strategy of fast delivery of merchandise in order to appease its customers.

Pricing Strategy: CEMAC's management maintains a competitive pricing strategy. However, the quality of products and performances are always put before the price. It is the mission of the management to "*offer premium products at competitive prices*".

Distribution: The firm does not have a distributor nor does it require one. The reasons behind this are firstly, the firm is void of overseas customers, and secondly, the customer/vendor direct contact is essential to build complete systems due to the highly customised products it produces for its customers. Thirdly, the modest size of the customer base and the market share the firm has indicate that it is neither economical nor feasible for the firm to engage distributors as its product outlets. The

firm therefore sells directly to end-users which also helps to keep products' prices competitive through keeping the downstream value chain shorter.

At times, however, OEMs or construction contractors procure Cemac products to incorporate them into their systems and/or to install them into their customer's premises.

Promotion: Cemac found an interstice in the commercial audio equipment market. Within this niche market the firm established itself with a steady and loyal group of customers. This is a specialised market sector but not free of volatility.

The firm therefore regularly advertises its products and services in a technical magazine. The magazine publishes six issues per year. Cemac also attends and regularly takes part in nationally held trade security exhibitions so as to display its products to potential new customers. As promotional vehicles the firm also relies on personal contacts and word-of-mouth.

Recently Cemac also built a web portal to display the products and services it offers.

Market Research: The company does not have a market research strategy as such. However, it monitors the changes occurring in its operating environment through studying the trade journals and monitoring progress of its competitors.

The firm also depends on feedback from its customers and enquiries generated from its advertising campaigns and it analyses them to get an overall picture of the environmental situation. In the context of market intelligence, the firm monitors the market situation through time to time checks on competitor's products and operating state wherever it gets the opportunity to so observe. Moreover, it often purchases competitors' products and disassembles them to examine the technology and processes adopted in developing those products.

Use of Information Technology:

Although the organisation has been using computers for the past 10 years it is still at the basic stage of using IT for business purposes. It has 2 IBM compatible PC platforms. The computers are mainly used for administrative and accounting purposes. In this context Sage accounting software is used. For word processing and/or invoicing purposes the firm uses a National W940 word processing electronic typewriter.

The main driving force behind enhancing the use of computers is Danny Garman, the installation engineer. He is a computer enthusiast and is responsible for the upkeep of all the computer hardware of the firm.

It also appears that although Mr. Moorehouse is a graduate in electronics he is not keen on computers. However, he never discourages his employees to learn about them. For example, he allowed Danny to build the firm's first web page.

Internet use: On the question of the Internet and W3 technologies, Mr. Moorehouse himself became aware of Internet technology through various newspapers, from his son Richard and his employee Danny Garman. Although the firm has been using computers for the past ten years it connected to the Internet only 3 years ago. This is again due to leading roles taken by Richard who attends university and Danny Garman.

Richard and Danny together designed the firm's web page about 18 month's ago. It took a month for them to complete the job. The web page displays the firm's product range with their concise physical and technical specifications and their prices. It also contains the firm's contact postal and e-mail addresses along with telephone and fax numbers. Danny Garman updates the web page every six months. The firm's current ISP is Freeserve Ltd. The access to the web is free of charge but the firm is responsible for relevant telephone charges.

In Mr. Moorehouse's opinion the Internet is not very useful from the point of view of his business and his firm's operating environment. At present he uses e-mails

sparingly for business purposes. Its main use is sending/receiving personal messages. Compared to e-mail, the management feels more at ease and comfortable with fax and telephone and mainly uses them as the firm's communication vehicles to communicate with its external environmental agents.

Danny expresses that the web page generates occasional product queries but so far none of them have materialised into business. The firm does not use the Internet for procurement of raw materials nor does it use the Internet for business or financial transactions. However, time to time Danny uses the W3 for monitoring the product development and/or progress of competitors.

Mr. Moorehouse is quite sceptical about the usefulness of the Net. He found that it is quite difficult to find information on the Net and often it is time consuming. In his opinion *"the Internet is like a maze"* with hundreds of thousands of extraneous elements of information without any systematic reference or guide to find relevant specific data/information quickly. He further adds that there is a long way to go before the Internet technology could be effectively used as a media for business, both in terms of its infrastructure and the changed mindset of business leaders.

It appears that, within the firm, Danny with his penchant for computers learns about this technology by himself first then this knowledge filters down to Mr. Moorehouse. Mr. Moorehouse is not directly involved with the Net nor is he keen about it. He expressed clearly that he learns about the Internet and the computers from Danny. However, he never constrains his employees from learning about it.

Part Two:

Fractured Analysis of Discrete Areas of Cemac's key IT/Internet Activities Using the Overall Holistic Contextual Insight of the Descriptive Analysis as Analytical Context

In the case of Cemac Ltd. the above descriptive analysis was used as a foothold for undertaking fractured analysis to gain an insight into the discrete areas of the firm's organisational and processual activities so as to understand the forces actively

enhancing and/or constraining the uptake of the Internet technology in Cemac's organisational development processes

In the following section CEMAC's strategic, operational and processual activities are discretely analysed in order to unfold the Internet's contribution to those organisational activities. The analysis will further reveal the influence of this technology on their development processes and the depth of integration of the Internet within those organisational functionalities of the firm.

'Fractured' Insight:

(a) Information Retrieval Vehicle and 'Technology Tracker':

The case reveals that Cemac Ltd. recently installed its internet facilities. It uses the technology for monitoring its competitors' products and their developments.

Such limited action is comprehensible from the context that the Internet technology is relatively new to Cemac. The firm's understanding of its potential is inchoate; the firm is in fact at the bottom of its learning curve so far as the Internet is concerned.

Also the firm is operating within a highly competitive environment. Its 'smallness' related problems, including meagre resources, results in a focus on the competition and the competitors act as a stimulus for action. Drawing on Porter's five forces model (1985), with a high entry-barrier and constant contact with its customers and suppliers the existing competition and competitors are the only concern to the firm. Therefore, the firm's obvious first reaction is to gather information about its competitors and their products. Using the Internet's virtue as a cheaper media and a relatively easy means to get into its competitors' W3 portals is the most convenient way for the firm to gather information about its competitors and their progress. A 'picture' of competitor activities is effectively 'transported' into Cemac.

(b) Method of Communication with Customers:

Cemac's use of the Internet for communication purposes specifically with its business partners is non-existent. This could again be explained in part by the fact that the Internet has only recently been introduced within Cemac's culture. On the other hand, the owner-manager eschews the technology on the grounds of its complexity of use. The only added stimulus for its use comes from an employee's penchant for information technology. The overall effect of all of these factors leaves Cemac a late starter in this domain. On the other hand, Cemac's communication culture is rooted in use of fax and telephone. It is time consuming to alter the beliefs, norms and mind-sets of a group of people, that is to change the 'culture inertia' of an organisation.

(c) Media for Advertising Firm's Products/Services and Information Board:

For nearly a year and a half Cemac has developed a W3 portal to advertise its products. Here is the evidence that Cemac is just beginning to realise the internet's potentiality as a non-traditional marketing tool.

Cemac has some strong competitors. They are stronger in their marketing techniques and Cemac recognise this. This threat acts as a stimulus for the firm's management. Therefore, although it advertises in a technical magazine for product promotional purposes, it also resorts to Internet advertising to exert a stronger presence in its market sector as well as to consolidate its position against its competitors in order to allay the threat posed by them.

In the same vein, the firm uses the W3 portal to portray its product information and the services it renders for its existing and potential customers. Arguably, the owner-manager sees neither time nor issues of complexity of use or of information overload as constraining in the context of internet use for advertising.

(d) Financial Management Tool:

For financial transactional purposes Cemac still follows traditional methods. The management is apprehensive to use the Internet in this context.

This behaviour could be explained on the basis of the following factors: Firstly, the technology is relatively new to the organisation. Drawing upon Argyris and Schon (1981) their learning cycle is currently at the 'discovery' stage so far as the Internet is concerned. Secondly, the firm's organisational culture is fax and telephone oriented. Thirdly, is the unenthusiastic attitude of the owner-manager towards the Internet technology. The cumulative effect of all these factors acts as an inhibitor to the uptake of this technology as a vehicle for online financial transactions.

(e) People Management Vehicle and Employee Learning Tool:

The management structure of Cemac is flat and simple. All instructions come from the owner-manager. In this context the IT has no function in the firm's culture, though great potential does, arguably, exist.

On the question of employees' skills upgrade or further training possibilities, the owner-manager maintains a liberal policy. He supports the 'on-the-job' self-training process.

This view is reflected through the firm's strategy about the introduction and the use of the Internet technology. Although the owner-manager maintains a nonchalant view of the Internet he does allow one of his staff to experiment with it. He then later learns from the employee.

The above behaviour suggests that although the firm does not have a learning strategy in place, it has a subconsciously implemented one. On the other hand, it appears that although the owner-manager is confused with this new technology, and therefore eschews it, he is willing to learn about it.

It appears that although the firm is somewhat of a late starter in the use of internet technology, it has a learning cycle in place, though unwittingly, and the firm is willing to learn about the Internet through a trial and error method, though the extent to which a 'double-loop' learning (Argyle and Schon, 1978) process is induced in this context is questionable.

In totality, Cemac's understanding of the utilisation of the Internet for organisational purposes is inchoate at present. This is understandable from the perspectives of the firm's small size and its operating environmental factors. However, the signs are that the firm is willing to learn about the technology and learns about it through experimenting with it. For example, the firm has started using it for product promotional purposes and, at present is at the initial stage of using e-mails for business purposes. The overall sign is that Cemac Ltd. is learning about the Internet technology, although slowly, and changes are occurring within its organisational culture in this context.

The effect of interaction between the Internet and Cemac's organisational activities is depicted in a matrix as shown on Fig-J.

Part Three:

Re-Contextualising Analysis: Recontextualising the Fractured Insight

Re-Contextualisation of the Case

1. Maintaining coherence and consistency of existing provision (i.e. existing markets, products, processes activities):

Analysis of Cemac Limited unfolds insight into how many technology-oriented small firms are operating within specialised interstices of high-tech. markets. In terms of scope Cemac's audio sector is narrow and competitive.

To a great extent it is the personal attributes and abilities of the owner-manager which has underpinned its effective development. Without the technical skill, experience and resolve of the owner-manager the firm would never have survived.

It is the owner-manager's business skills that enabled the firm to identify a small number of large financial organisations as its steady and loyal customers. The management also understands the risks and pitfalls inherent in expanding the business

further, especially within a sector such as theirs. This owner-manager perception in fact inhibits and constraints him from growing his firm further. The business is the sole source of earning for the owner-manager and his family, and this provides the major parameters within which to consider the firm's development potential, with the risk level a key ponderable.

The investigation also reveals that Cemac's organisational structure is simple and flat. Its production processes are also traditional in that it is manual and using minimum gadgets and with no automation or semi-automation within the production processes whatsoever. Yet using these simplest forms of organisational methods and production processes Cemac is able to offer sophisticated and quality products to its customers.

Whilst then on the one hand it is the owner-manager and his savvy, experience, understanding and virtues that are the strength of Cemac and have made the firm successful, on the other hand, this source of strength also unfolds as a source of inherent weakness of the firm. The owner-manager's understanding of constraints imposed by the operating environment upon Cemac and of the firm's limitations makes him cautious. And this cautious mind manifests in his nonchalant management approach and detracts from him being innovative beyond his existing levels and further reflects in his lack of motivation to concertededly use the Internet for business purposes.

This strand of interpretation one could posit as contradictory 'mental mode' which on the one hand sees the owner-manager with positive perception of the external environment and high level ability to design microprocessor-controlled state-of-art complex products, whilst on the other hand his understanding and views manifest in low-level perceptions about the W3 and the Internet as a farrago of information.

This nonchalant owner-manager mind-set also impacts a further weakness to the firm's activities in that it severely undermines the marketability of the firm and a willingness to reinforce existing markets, products and processes activities of the firm and unfold development of the boundaries of that provision to an extent that provides concerted growth. The result is the firm trailing behind its competitors, despite its superior product range.

Arguably, this interpretation of the developmental context of Cemac can be further highlighted through focus on owner-manager attitude to marketing. None of Cemac's employees have marketing training or experience of any kind. Again, the reluctance of the management to grow further acts against the development of such experience. As a result the firm is void of any formal marketing activities. Certainly, the management does not see the necessity for a marketing plan. Whether small businesses actually benefit from the use of written or other formal marketing plans continues to be argued in the literature. That said, a lack of formal marketing consideration by Cemac of the market in which existing customer-base could change or may be susceptible to such change may paradoxically be impacting potential risk-levels of a nature which the owner-manager is at odds to avoid and which impact his mind-set in the first place. It is thus the area of marketing which provides a sound example of where within the business intensified Internet and IT-related activities could aid Cemac's ongoing development.

The investigation of Cemac Limited thus reveals that the firm is void of any significant formal marketing strategy. However, some activities in this field were observed. For example, an Internet based W3 portal has recently been installed by the firm for product advertising purposes.

As the analyses reveals, the firm's position is precarious due to its sole dependence on a cluster of existing customers. To allay the threat posed by this dependency Cemac's management could look elsewhere for alternativemarkets.

Considering the size and resources of the firm, the Internet could be the most effective vehicle to underpin this. The Internet will enable Cemac to:

- (i) Anchor it as a powerful media to advertise its products and services range to potential customers.
- (ii) Unfold understanding of and vie for alternative markets both at home and overseas.

- (iii) Explore the possibilities of entering into a different market interstice through product modifications, thus building on the product design capability, the main strength of Cemac.
- (iv) Underpin an Internet based communication infrastructure in order to dialogue with its existing customers and business partners thus establishing a stronger bond with them, and consolidating 'dialogue' as a main source of organisational learning activity.
- (v) Monitor its competitor's progress and changes in its environment on a regular basis.

2. Effecting strategic adjustment to existing markets, products and processes activities:

The Potential/Non-Potential for Rationality in Effecting Long-term Development within Cemac.

Utilising a rational long-term planning mode of management as a frame of reference suggests, in theory, the need for Cemac to attempt to formalise its management approach to coping with the external change environment and thereby build in a long-term perspective regarding future market and product development paths.

Uptake of such a formal management approach highlights the potential for a more significant and concerted anchoring of information technology within Cemac. Of great potential would be the possibility of developing a marketing information system that feeds information about developments in the firm's marketing environment to support the owner-manager's decision making activities. Such a system would facilitate evolvment of information from internal company records, through marketing intelligence activities, through formal market research and marketing decision support analysis (Kotler, 1990).

Such formality requires a combination of non-casual (formal) human and IT based activities designed to serve rational strategic management processes of analysis, planning, implementation and control.

De-constructing the Formal Comprehensive Marketing Information System within a Context of Identified Cemac Management Processes

The formal marketing information system is intended to serve a rational long-term planning process. Such a planning process would involve a linear step approach to strategic control in terms of discovery, choice and action. Integral to such management processes is an assumption of strategic thought processes in the form of mental activities of a basic rational nature: identification of strategic problem; diagnosis of the nature of the problem; conceiving of how the problem should be addressed with an objective evaluation toward some 'best solution'; and realisation of what actions should be taken.

Analysis of Cemac suggests no such formal planning exists within the company. The management always approaches the future on a 'as it arises' basis. And follows solely an 'enquiry driven' (from a number of customers) marketing strategy. The main focus continues to be upon existing activities and on existing capabilities. And upon a willingness to learn its way forward from that base. Integral to this willingness to learn is a 'learn from customer' mode of development: the owner-manager makes his decisions through close consideration of the present market, customer demands and integral customer requirements. A predominant 'strategic' approach is that of Cemac continuously reviewing its 'business strategies' in accordance with its customers change in strategic direction. Embedded in such management decision making approaches and activities is a frequent innovative, creative orientation, not least in terms of design capability. Thus, whilst one could criticise a somewhat reactive (enquiry-based) mode of management, the owner-manager also demonstrates an ingrained pro-activity in his innovation activities surrounding product design and customisation.

Here, we may have the beginnings of a construction which implies any attempt at evoking an increased formalisation of Cemac management processes to incorporate

rational, linear, step strategic thinking processes would likely crowd out the generative, creative strategic thought processes which seem to epitomise Cemac.

Cemac operates in a predominantly unpredictable environment: its strategic discovery, choice and action actively can probably best be described as messy non-linear and intertwined. For example, the firm is probably best suited to learning its way along using design and experimental action to learn its way through a strategic problem and unfold a solution.

This being the case, the components of a formalised marketing information system (drawing on Kotler,1990) for frames of 'rational' reference where appropriate are likely to take a far different form to those intended in serving rational planning modes of management:

Internal Record Systems: Within Cemac the potential certainly exists to increase formalisation of reports on orders, sales, prices, stock levels, accounts receivable and creditors and to give close consideration to the potential use of internal computer-based management systems to effect short interval planning, control and problem and opportunity detection. Internal records produce results data.

Marketing Research Process: Formalisation in this respect involves a step approach incorporating definition of the strategic problem: development of a research plan; collection of information; analysis of information and presentation of findings. Integral to this process is the build up of a marketing database in the form of an organised collection of comprehensive data about individual customers, prospects, or suspects that is current accessible and actionable for marketing purposes such as lead generation, lead qualification, sale of product or service, or maintenance of customer relationships.

The nature of Cemac's operating environment, its resource (formal data collection is very expensive) and capability base and, most importantly its strategic thought mode see the firm better suited to unfolding understanding of the market environment through interface with suppliers, customers and sub-contractors. And in learning from action about competitors through processes of reverse engineering. Marketing

research as the systematic design, collection, analysis and reporting of data and findings relevant to a specific marketing situation is at odds with the informal and idiosyncratic management processes which epitomise Cemac.

For Cemac, it is more a use of *marketing intelligence activities* providing happenings data about pertinent developments in the firm's marketing environment than formal market research. Dialogue with customers, suppliers, distributors and study of journals provides for the unfolding of understanding about external change and opportunity. The argument for formalisation into marketing intelligence system rests on the danger of over-casualisation without such formal system. Argument against rests upon the likelihood of the removal of creativity and spontaneity of learning and of generative strategic thought process. Within the small firm, learning can come from informal, chance and even accidental encounter. Formalisation to a point of establishment of a formal internal marketing information 'centre' to collect and make available marketing intelligence, IT- or manual-based, appears to be outside the parameters of a small firm of the nature of Cemac.

Marketing Decision Support System: Arguably Cemac's owner-manager has to analyse a problem and take appropriate action. A marketing decision support system is a coordinated collection of data, systems, tools and techniques with supporting software and hardware by which an organisation gathers and interprets relevant information from business and environment and turns it into a basis for marketing action. At the most basic level of description, the potential exists for Cemac to access software to help the owner-manager to analyse, plan and control the strategic development of the business. The upside is the possibility that such software can assist in the owner-manager's generative strategic thought processes. On the downside the logic and rationality inherent in such programmes and their delivery of what is often externally-derived non-contextualised information may crowd-out the creativity and action learning integral to Cemac's strategic problem-dealing.

3. 'Organisational Learning' as a Key Dimension to Strategic Development:

Cemac demonstrates some orientation toward organisationally learning its way along in terms of effecting adjustment to its markets, products and processes activities.

Utilising parameters normally associated with a theoretical 'pure' or 'ideal' learning organisation status provides analytical sub-frames of reference for consideration of the input of IT and the internet to facilitating organisational learning and how this might be intensified within Cemac.

Commitment of top management: Maximisation of organisational learning within a particular company would require the commitment of top management to learning including provision of development opportunities and support structures. Given the size of Cemac and clear resource constraints, the potential for the owner-manager with regard to 'creating space' for learning is clearly limited. However, there is potential for the learning orientation that characterises the owner-manager to be embedded in the trusted and more capable organisation members. Given the pace of external change and the inherent uncertainty, an owner-manager willingness to anchor into the learning of key workforce is arguably a prerequisite for survival and/or growth in many small businesses. Cemac could thus adopt a more conscious organisational learning perspective.

Fostering of a conducive climate for learning: Such an organisational learning mindset could include the nurturing of a climate for learning that allows organisational members to exercise freedom to think for themselves. Within an information technology context, this would involve encouragement of workers to utilise, and consider potential for enhanced utilisation of, information technology for internal control purposes and the Internet to facilitate intensified 'external' learning. Whilst including activities such as identification of problems and opportunities, whether the freedom levels afforded to the workforce would include authority to take appropriate problem-solving and developmental actions would be dependent upon the values and attitudes of the owner-manager. Key here is the potential for Cemac to build on the existing informal flexible working environment and in so doing facilitate a 'natural' unfolding of understanding of how information technology can increasingly facilitate strategic learning, control and development.

Creation of opportunities for everyday learning: Such 'natural' unfolding of understanding is exemplified in, say, current activities in the form of existing outsourcing of sub-processes to sub-contractors. A pre-requisite for Cemac is access to

and use of numerous suppliers. Opportunity here may relate to informal, spontaneous or even accidental learning from suppliers and sub-contractors relating to competitor activities and of how the industry sub-sector may be unfolding. Much of this learning may be from direct face-to-face or telephone interface, some could derive out of electronic communication. The potential certainly exists to exploit day-to-day contact in terms of 'snippets of learning', and whilst it would seem inappropriate for a firm of this size to look to formalisation in terms of some 'centre of intelligence', the potential does exist for electronic storage of key 'external information' which builds out of day-to-day context.

A wider ability to undertake environmental monitoring that is facilitated by a continuous learning process: Cemac needs to adapt to change and maintain an ability and flexibility to underpin sustainable development. An existing ingrained 'learning orientation' sees an environmental monitoring capability in the form of competitor observation, the study of trade journals, effecting of customer feedback and attendance at trade security exhibitions. The opportunity to further build up continuous learning process exists through intensifying links in the firms total stakeholder network, which would, at least in part, include the sub-contractor and supplier interface discussed in the previous section. Key is the educating of the workforce of potential to milk learning opportunities and willingness to anchor-in learning of key workforce as discussed earlier.

Certainly the potential exists for Cemac to make more extensive use of information technology in the anchoring in of insight from its total stakeholder network and from non-stakeholder sources in order to improve 'monotoring' of its external operating context. For example, for Cemac, an external imposition in the form of government regulations is perceived to be the main constraint on growth. Insight into such regulation is available from government departments and on the Internet. The owner-manager does not view the Internet as very useful with regard to his business and operating environment. He feels it is quite difficult to use and that it is time consuming to find information on the Internet. And from both a theoretical and practical, perspective, he does have a point. On the one hand, a willingness to avail himself of appropriate training would probably alleviate this problem. But on the other hand, some commentators argue that *'the information revolution has caused*

managers to be less well informed than they were before....present information systems offer few clues about the outside factors affecting institutions....information about the outside world is not usually available in computer-usable form' (Economist, November 3, 2001). Probably a partial explanation with regard to the owner-manager's concerns about Internet provision of timely, usable information.

Translation of learning activities into practice in the form of a positive change in organisational behaviour: One key issue integral to the 'learning orientation' of Cemac is a detected ability to translate its learning activities into practice. For example, it often integrates available new technologies to upgrade its product range. It could be argued that its present 'learning activity forms', based more around dialogical, observational and experience-based learning actions than the anchoring-in of information technology/the internet, do allow for the translation of those learning activities into practice. At issue with regard to the Internet, is the 'search-times' involved and the computer-usable nature of the information it provides. Arguably the Internet will spew out mass data for the Cemac owner-manager and even help him screen that crude mass data down to information. One must question then how close and complete that provided information is to enable the owner-manager to contextualise it (to a Cemac problem context-specific state) as a basis for effecting a change in organisational behaviour (in terms of appropriate adjustment to existing markets, products and/or processes activities).

The thread running through the analysis - Effectively utilising and leveraging information technology as an enabling tool: Arguably a quantum leap can be achieved in Cemac's organisational learning and strategic development through the effective use of information technology as an enabling tool in the form of the capture, storage and sharing of knowledge throughout the organisation. The previous sections of analysis begin to 'condition' the extent to which this may be achieved. Information technology-dependent factors have been spelt out - and internal owner-manager related factors are explicitly and implicitly considered (for example, owner-manager willingness and ability to leverage individual understanding and learning capability of his workforce and to encourage team learning as a vehicle to speed up the learning process and willingness and ability to consider the wider potential use of information technology and the Internet).

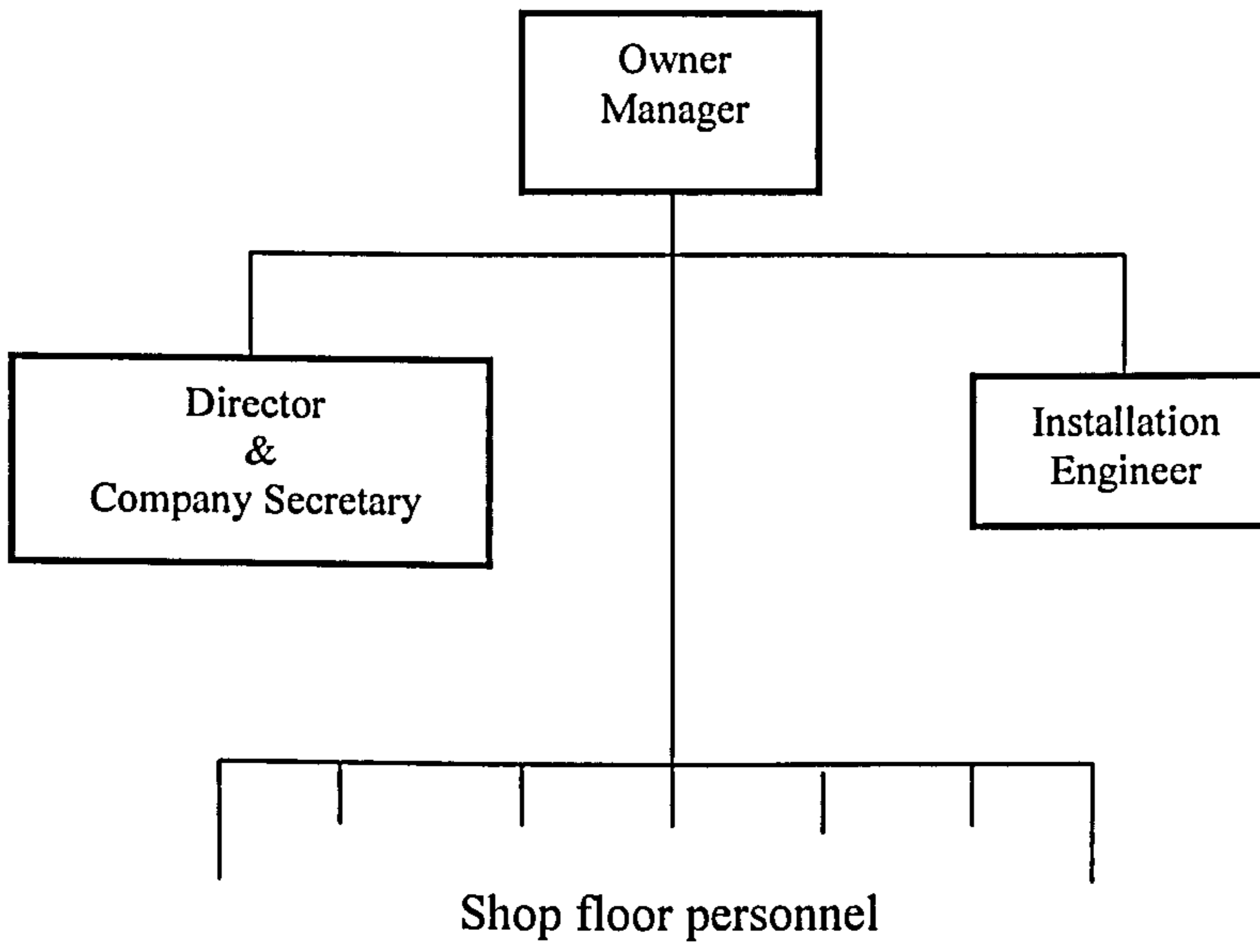
As an holistic guiding frame for future consideration of a more all-embracing anchoring-in of information technology, Cemac might reflect upon the benefits of a total control system in the facilitation of sustainable strategic development of the business:

- a) Short-interval control systems which facilitate tighter control of day-to-day activities will provide for smoothness of the operational and thus the space for
- b) Cemac conducting and extending of the existing learning activities to effect strategic control of the uncertain external environment. The likelihood is that this will continue to evolve in a combination of manual and computerised forms.

APPENDIX-I

CEMAC Limited

ORGANISATIONAL HIERARCHY



Chapter Nine

*The Case of
Digitimer Limited*

CHAPTER NINE

CASE STUDY ANALYSIS: CASE OF DIGITIMER LIMITED

Digitimer Limited, Welwyn Garden City, Herts.

Part One:

Descriptive Analysis:

Introduction:

Digitimer Ltd. was founded in 1972 by the present owner-manager/managing director's (MD/OM) father the Late Mr. Alan Smale. The firm was in fact a split-away from a local larger firm, Devices Ltd. The parent firm used to design and manufacture specialised monitoring equipment for medical research for medical schools, medical research institutes and pharmaceutical industries. Devices' core specialty was to design and manufacture equipment for cardiology, urology, central nervous systems and implant pace makers.

In the early 1970's Devices' senior management decided to reorganise their business around urology and pacemaker activities and to sell off the cardiology and neurological parts of the business. Mr. Alan Smale bought the business rights for the neurological/central nervous system part from the parent company and founded Digitimer Ltd in 1972 in the same locality but just across the road. The name Digitimer was taken from a product which was a digital timer or a digital event timer/programmer.

On acquiring his degree in Electronics from the City University, London John Smale joined his father's firm and has stayed there since then. He eventually inherited the business following his father's death in the early 1990s.

The firm still operates from its original premises where it started in the early 1970s.

Digitimer's Operating Environment: The Medical Electronics Sub-Sector:

Digitimer Ltd. operates within the medical electronics industrial sub-sector. Medical electronics can be considered a sub-sector falling within the broad industrial electronics sector.

For health and safety reasons this sector comes under the jurisdiction of the Medical Devices Directorate (MDD). All the products and production processes within this sector are under the strict control of MDD.

The stringent MDD quality control procedures, in a way, act as a deterrent to new entrants to this sector. For small firms this acts as a high entry barrier while strict regulations, along with a small potential market, deter larger companies from entering this sector. Moreover, the health and safety factors deter customers from switching suppliers.

The net overall effect is a unique situation where a handful of customers and suppliers operate within a community resembling a closed market environment. Their mutual interdependence in turn creates stability within this environment.

Company's Products and Markets:

The company designs and manufactures various specialised electronic monitoring equipment and instruments for clinical research and clinical investigations in the human neurology domain. For example, Digitimer produces a neuro stimulator (DS5) to facilitate study of nerve excitability which was developed in collaboration with Professor Bostock, Sobell, Department of Neurophysiology of the Institute of Neurology, London. It has also developed a MultiPulse patient monitoring simulator (D185) which protects the mobility of patients undergoing spinal, or aortic aneurysm

surgery which has been used around the world for the past five years. The firm has also developed and now manufactures a high voltage Stimulator (DS7A) for peripheral stimulation, compact Neurologgers for Neuro research applications and many other intelligent and programmable instruments for Neuro-clinical research. The company also imports complementary instruments for sale alongside its own manufactured products as well as a range of products ranging from bare printed circuit boards to fully tested pieces of equipment for other electronic equipment.

From the beginning the company's core competence has been based on the design, manufacture and supply of neurological instruments. The technology is highly specialised to provide for the market comprised of clinical research, medical teaching schools and pharmaceutical institutions such as London University, Glaxowellcome in the UK and, similar organisations around the world. This is a highly specialised niche market sector with a limited number of high-tech professional customers. According to Mr. Smale *"it is more like a community"* in the form of a relationship between the small number of customers and their vendors. Digitimer has almost retained the same loyal customers through its entire life span. Over the past 29 years some sort of invisible bond has grown up between Digitimer and her customers.

The company has a small but stable customer base worldwide for its range of products. At present its overseas and UK domestic market splits in a ratio of 40:60.

People as Resources:

- *Employees:*

At Present, the firm has around 19 personnel. According to Mr. Smale: *"All of them are skilled in their respective fields"*. The workforce comprises of senior managers, a storekeeper, a buyer, a test engineer, administrative and office staff and shop floor personnel.

- *Reporting Structure:*

Although the firm has a hierarchical reporting structure the working environment and the working relations within the firm are rather informal and relaxed as there is "no rivalry or competition" among employees.

However, to maintain the order and smooth running of the internal operations the reporting structure is layered with two directors and four managerial staff reporting to the MD/OM.

An organisational chart is provided (Appendix) to reflect the hierarchy of the organisation. Within this command structure John Smale holds two important positions: Managing Director and the post of Technical Director.

- *Education and Training:*

Other than Mr. Smale no one has a degree of any kind. However, all staff completed their schooling to O'level and A'level. With regard to staff training, the management believes in an 'on the job' training principle and therefore does not maintain a formal training strategy for its employees. The firm does though allow one of the employees to attend a weekly half-day day release course at the local night college and pays fees for another two employees to undertake engineering courses at the Open University.

With regard to upgrading the skills of employees the management maintains a liberal view. Employees are free to train themselves if they wish. The reason behind this flexibility may be due to the paucity of properly trained personnel in the medical electronics arena in this locality. In order to utilise human resources effectively and to increase productivity, the company always cross trains its employees to acquire more than one skill. The employees are therefore able and expected to do more than one job in a multi-skilled environment. For example, workers even redecorate the premises and their work places themselves.

It seems that the firm only takes advice from external consultants in the domain of quality control practices. During the past five years the firm has twice used the local Business Links and drawn on their advice in some areas of business improvement. However, the firm does not have a high opinion of them.

Production Processes:

With regard to production and manufacturing processes the firm has a self-contained production floor along with a computerised stock-management store and a test laboratory located on the ground floor of the premises. The production facilities contain a flow-soldering machine and a pair of assisted 'pick-and-place' programmable semi-automatic component assembly machines. The environment is not of a mass production type therefore the amount of workload and types of technology the firm is involved with do not justify investment in an expensive fully automatic assembly machine. The firm also has the manufacturing skills and facilities for surface mount technology (SMD) based products. The facility was added over time and is a pure diversification of the core business line. Discovering the local demand for SMD technology, John Smale added this 'extra' line to utilise his extra production resources to increase the firm's revenue. The firm itself does not require, nor does it use, SM devices in its products.

Due to the nature of the products (clinical) they must conform to the Medical Devices Directive (MDD). Therefore, the components as well as the finished products are required to meet the strict MDD regulations and to meet the strictest test criterion. The company hires the services of an experienced test engineer for this purpose. He is also responsible for after sales service of the products. Because of this strict regulation, which itself has changed little over time, the production processes have also changed little.

For the same reason, the firm hires the services of external sub-contractors only to complete unimportant parts of the manufacturing processes such as manufacture of PCBs and painting of consoles.

Production Strategy: During and just after the late Alan Smale's era the firm's equipment was wholly manufactured and produced at its present Welwyn Garden City site. But with the growth of electronics technology the company for economic reasons gradually changed its manufacturing and production strategy. At present it is not "*economically feasible to manufacture all the components of a system*": some of the components are mass produced by other manufacturers "*which are much cheaper to buy than to produce in-house*". Today there is a 60/40 split between in-house manufactured and bought-in completed items.

Products are always made to customer's orders. There are no 'ready for delivery off-the-shelf' products. Delivery times vary from product to product. However, the lead-time for delivery is on average between 4 and 6 weeks.

Finance and Financial Control:

The firm's average turnover is around £1 million. In the main, Mrs. Smale looks after the financial side of activities. The firm prefers a strategy of self-financing. Whenever possible it avoids borrowing from financial institutions. However, in 'rainy times' it borrows from banks. The last time such an incident occurred was some five years ago when it was going through a turbulent financial period.

The firm's financial environment is quite unique due to its operating market environment. As its customer base is a mix of international and home base its ebbs and troughs in cash flow are largely dependent on the economic situation of the country(ies) which its customer's derive from. This is quite a complex financial model as the economy of a country is dependent on various interlinked national and international political, economical, social and technological factors.

The management is therefore quite aware of the importance of cash flow. In the past the organisation has experienced delays in payments from some of her overseas customers. Particularly customers from countries like Portugal and Italy. However, most of its customers are quite 'gentlemanly' in respect of payments. In most cases of overdue invoices a fax is "more than sufficient" to elicit payment.

Competitors:

The company's competitors are mainly of similar size to Digitimer's. They are mostly North American firms. For example: BAK, COULBOURNE or WPI.

According to Mr. Smale the main success factors of its competitors are that they all operate in a niche market with each competitor often maintaining a specialty in one or more product areas.

Holistic Development and Marketing Activity:

The firm is committed to an informal, flexible and relaxed working environment which is reflected through one of the organisational rituals held each morning. Every morning at 10 o'clock all employees, including the MD/OM, assemble for their morning coffee in the conference room and spend a few minutes on informal chat. The firm is very keen to maintain an informal internal environment in this way. According to Mr. Smale all employees know each other by their first name within the organisation.

In order to maintain this informality, Mr. Smale does not wish to expand his firm beyond an employee number over 25 or 30. He thinks beyond this number the personal touch is lost while the employees become *"just faces at their work place or just another face on the corridor"*. Mr. Smale has other reasons for keeping his employee numbers under control. Firstly, in his view this is a specialised niche market with limited number of customers and with a limited scope to grow. Secondly, he intends to stay focused on his firm's core competencies and therefore is strongly against diversifying into other areas. Thirdly, it appears that he does not want to move to a new larger premises associated with further growth and sees the existing premises as *"too small to accommodate staff of more than 25"*. He expressed how he is perfectly happy with where he is now and, does not want to take further risks and encounter the hassles of expansion to new product and market areas.

The position of the firm with its operating environment is rather steady-state due to its specialty products and services focused toward its small but steady number of

customers. In the context of future planning and strategy, it appears that the management does not have either a long- or short-term marketing or strategic planning programme in place nor do they intend to introduce one. Neither has the firm a written planning procedure. In the MD's opinion, a long-term marketing programme is expensive and he prefers to face the situation on an "as it comes" basis.

Seemingly the firm has a planning vehicle in place which it could draw on, though the firm does not have it in operation nor does the owner-manager intend to plan or expand in future. The management does, however, take strategic steps in order to ensure the continuance of its business. Those steps are taken by 'discovering' from the present situation ('as it comes') then 'choosing' appropriate development measures for implementing: effectively the firm acts on the basis of learning from the present situation of activity and extending by incrementally learning about new customer requirements and thus gradually builds out of its core activities.

The firm does not have a formal learning strategy as such. The employees learn from each other through discussion. The informal and flexible working environment in turn supports this learning environment.

The organisation also learns incessantly from its customers and competitors through their encounters in various meetings and conferences at national and international levels. The knowledge is disseminated throughout the organisation through distributing the proceedings and conference papers, professional literature and magazines and through discussion and dialogue. Information gathered through monitoring the external environment also adds to the organisation's knowledge base. Knowledge is obtained from visiting customers and discussions about their requirements and finding possible solutions.

According to Mr. Smale the strategic process is an ongoing process of activities in the form of a continuous cycle of learning and accumulation of knowledge.

Inherent Marketing Approach: The success of the firm can to a great extent be accredited to the novel 'community-like' bond between Digitimer and its customers.

In John Smale's opinion this "customer support" is the prime factor behind the success of Digitimer.

The firms' marketing strategy has also been built on this warm customer-vendor relationship. In Smale's words his marketing strategy rests on "*we don't sell our product, but allow our customers to buy them*". Digitimer even "takes back" a product "*if its customer does not like it*". In John's view this sort of strategy is essential in the interstice of the industrial sector they are operating in. He continues "*it is a niche market with an intellectual bunch of professional customers*" who are close to each other due to their profession and "*very often they talk among themselves*". Often the firm helps its customers to select a piece of equipment to meet their requirements. Employees frequently visit customers' premises in order to understand their requirements in real terms through discussion and try to find a best solution. This approach and involvement works well with the culture of the firm as the company never sells equipment on commission or, as John Smale asserts, "*...we are not pushy*".

Pricing Strategy: The firm always maintains a competitive pricing policy. However, due to the nature of the products and customers, the quality and performance are always given prime importance over price. Thus, such quality focus effectively sees the potential to charge a premium which reflects the firm's quality-based capabilities and close attention to customer needs.

Distribution: The company has a customer base worldwide. Digitimer thus uses a chain of overseas distributors to service those overseas customers while the domestic customers are catered for directly by the firm itself. However, in some overseas markets a customer is also served directly with the firm by-passing the distribution chain if the customer itself contacts the firm with its requirements. This is possible due to a partial distribution contact made with the distributors for those countries. Distributors for the United States and France are categorically falling within this group.

Promotion: The company has a small but steady customer base. It serves a specialised niche market. The organisations in this industrial sector promote their products and services in a novel way. The producers and customers meet regularly at conferences

organised by various clinical bodies. For example, meetings in the UK are organised by the UK neurological society every other month. The venues for those meetings are various medical schools' and pharmaceutical companies' sites. According to Mr. Smale those meetings at a national level are small where vendors and customers who know each other meet. Competitors know each other's products while the vendors know their customers. These are like close communal meetings where the same people come and meet every time. There are also international meetings held every three years at various overseas places. For example, this year's (2001) meeting is to be held in Rio de Janeiro in September/October organised by the International Neurological Society. In those international level meetings up to 3000 exhibitors and 30,000 delegates from all over the world take part.

These national and international conferences are ideal places for the firm to get to know other competitor's products and developments. The firm comes in direct contact with existing and potential customers and competitors, displays its own latest products and is also able to see and judge its competitors' displayed products. The company also keeps track of competitors through proceedings of the international conferences as well as through respective professional journals.

Through attending conferences, meetings and studying conference proceedings and trade journals the organisation continuously learns about changes occurring in and around its environment and gains insight into its customer's requirements and competitor's products and their development strategies.

Use of Information Technology:

The firm has been using computers since the dawn of personal computers (that is since about the late 1970s). The first computers the company had were Z80 8-bit processor based and ran on CPM system software.

At present the organisation has 12 to 16 stand-alone IBM compatible desktop computers run on Microsoft's windows system software. It was observed that almost all employees, except the shopfloor employees, use computers.

The firm uses computers for almost all possible applications. Standard software is being used for administrative work like word processing, accounting, pay rolls, generating and store inventory control to technical applications such as PCB design, circuit design, desktop publishing, software development and software testing. It also uses computers for data communication and for e-mails.

The firm takes the computer seriously allocating a staff member full responsibility for provision of technical support.

Internet Use: Although the company has a long history of using computers (Mr. Smale is a technically competent and qualified person) the firm is working with the leading edge of electronic technology and the management is quite aware of the advent of the Information Superhighway Technology, it was not connected to the World Wide Web through the Internet until 1996. At present, the firm's ISP is a company named NILDRAM. The ISP provides the access to the World Wide Web (W3) for a flat rate fee of £50 per month for an unlimited number of nodes and e-mail addresses.

The company uses the Internet for various purposes, mainly for communicating with its customers through e-mail. The firm conducts business on the Internet but in the main this relates to clarification of customer's requirements or demands and/or sending of invoices and other business related information. Over the past 2/3 years the e-mail has gradually replaced the fax and telephone and become the dominant communicating media for the organisation. For example, at present 80% of communications are made through emails while telephone and fax are used only in 15% and 5% of cases respectively. The firm also uses the Internet for interactive communication purpose to facilitate an 'electronic communication' to answer customer's queries to their satisfaction. In Mr. Smale's view this Internet based communication is a lengthy process, sitting in front of the console and engaging in "an electronic conversation" which is more time consuming than a fax. The Internet is also used for marketing intelligence for monitoring and exploring competitor's web sites for their product information. The firm also uses it for advertising its products.

Further uses include Internet based air-ticket reservations, the gathering of the latest information about conference and exhibition itineraries, and the downloading of conference paper abstracts and proceedings. However, with regard to financial transactions, the organisation feels insecure and never ever uses the media for financial transactions of any kind.

The firm has a web-site, which is maintained by an employee. Part of his task is to upgrade the company's web site and to maintain the Internet related applications. The web site is being used at present for advertising the company's products and services.

The Internet makes one important contribution to the firm's business strategy. At present the firm is able to contact, and sell its products directly to, customers through the Internet and has thus been able to reduce its value chain links such as distributors and retailers. This enables the company to be more competitive and able to serve customers at a reduced cost and time. However, in Mr. Smale's view it does not provide much leverage to his firm in terms of competitive advantage or other strategic advantages, because almost all its competitors have acquired this technology. In Mr. Smale's words: *"when everybody has acquired the same technology its strategic advantage is lost"*.

Part Two:

Fractured Analysis of Discrete Areas of Digitimer's Key IT/Internet Activities Using the Overall Holistic Contextual Insight of the Descriptive Analysis as Analytical Context

The above descriptive analysis was utilised to gain an insight into the discrete areas of Digitimer's organisational activities with regard to the IT and Internet applications so as to understand the enhancing and inhibiting forces acting within the firm's culture towards its uptake of the information and communication technology (ICT) within its organisational development processes.

In the following section Digitimer's strategic, operational and processual activities are discretely analysed in order to unfold ICT's contribution to those organisational

activities. The analysis further reveals the influence of this technology on their development processes and the depth of integration of the Internet within those organisational functionalities of the firm.

'Fractured' Insight:

(a) Information retrieval vehicle:

The descriptive analysis of the Digitimer case points to one of the many uses of the Internet by the firm as an instrument for gathering information. However, this activity remains limited to searching for information about competitors' product ranges, product specifications and downloading of various conference papers.

The situation could be explained from the perspective of Digitimer's operating environment and its owner-manager's attitude and psychology. Firstly, Digitimer operates within a relatively closed environment. The high entry barrier to this sector and close customer-supplier relationship adds extra dimensions to the relative stability of the environment of this electronic sub-sector. Secondly, the owner-manager's reluctance to further growth and his perceptions of a cosy-cosy closed environment determines the firm's approach to long- and short-term strategic planning processes.

This owner manager's perceived relative stability of the firm's business environment leads to an owner-manager's mindset of predictable future. The benign environment acts as a non-stimulant and adds complacency to the firm's organisational behaviour. The cumulative effect is that Digitimer's learning process falls to a great extent within a single-loop learning process (Argyris and Schon, 1978). In the final analysis, the firm's use of the Internet in the main ends up as a repetitive information gathering process though a frequently beneficial process.

(b) Media for communication with customers:

In the context of communication, Digitimer is increasingly using e-mails to communicate with its business partners: customers, suppliers, sub-contractors and distributors. In this regard the management's perception of the Internet is two-fold: a)

a cheaper communicating media and, b) a faster communication vehicle to maintain contact with its business partners.

Again, this behaviour is based on the fact that Digitimer operates within a benign environment where activities are routine. Those repetitive day-to-day happenings within the firm perpetuate as single-loop learning processes. The management's perception about the Internet's potentiality therefore is limited to viewing it as a cheaper communication vehicle. In their view the only competitive usefulness of the Internet is as an instrument for lowering the firm's overheads (Quelch and Klein, 1996).

(c) A Control Instrument with Regard to the Firm's Distribution Network:

On some occasions Digitimer shows a glint of understanding about the usefulness of the Internet as a potential strategic tool. One such case is its use of the Internet as a distribution channel for its products (Ghosh, 1998). It is arguable whether the firm pre-planned this strategic use as it does not have a formal strategic planning vehicle in place but its 'discovery' and 'action' certainly reduces the firm's down-stream value chain links thus providing it with some definite competitive edge through enabling it to reduce prices of its products. A key non-quantifiable strategic gain is that of management and control of the linkages between Digitimer as a 'value chain' and the 'input' to that value chain of its distributors. Thus, cost advantages derive from an enhanced smoothness of operation.

(d) 'Information board' for Potential Customers:

Porter (1985) asserts that information should be a weapon to aid in gaining competitive advantage. Porter and Miller (1995) contend that information will be a new strategic tool in marketing processes to create competitive advantages. Along these lines of thought Digitimer's use of the Internet based W3 portal as an advertising media to reach its customers and potential customers is an example of its utilisation of the Net as a strategic marketing instrument.

However, Digitimer's use of the Internet in marketing stops at displaying its products and their technical specifications on its W3 web pages (Levitt, 1995). The act rarely differs from a conventional way of advertising in a technical magazine. The potential for considering advertising beyond an 'information posting' to that of an interactive media is not considered.

(e) Financial Management Tool:

In the context of financial transactions, Digitimer still follows traditional methods and processes. Seemingly, it does not have a plan, neither for present nor for near future, to change its monetary payment methods in that it has no intention to transact electronically with its business partners.

It appears that as a technically competent person, the owner-manager, is quite cognisant of the present open-structure of the Internet and of the danger associated with such a structure in the context of financial transactions. Commensurate with the work of Anhern (1995) it could be concluded that the owner-manager's apprehension is the root cause behind this action.

(f) People Management Vehicle and Employee Learning Tool:

In the context of the management of its human resources Digitimer uses the Internet in several ways. It maintains a liberal policy with regard to the upgrading of its employee's skill-set through on-the-job training. This self-learning strategy allows its employees to train themselves on the use of Internet technology. This liberal strategy pays off for the organisation in many ways. For example, it enhances the technical skills of its employees. In turn those trained employees boost the productivity of the firm. Secondly, this self-training increases the self-confidence of the employees and increases their chances of further career progression within the firm. This in turn reduces employee turnover, thus reducing the costly recruitment process within an environment where paucity of trained personnel is well known.

(g) Change Monitoring Tool and 'Technology Tracker':

Although the firm's operating environment is relatively benign the technology it uses is protean in nature. Moreover, the economic trend at the macro level and the world's political situation remain unpredictable. Drawing on Wyer (1995), in such a situation it is necessary for an organisation to scan its environment for information in order to determine its future actions through informal interface. Comprehensive wide reaching scanning, according to Wyer, is beyond available time, resources and ability levels of most small businesses.

In line with the work of Lymer et.al. (1995), it could be said that Digitimer's management is well aware of this fact and in this regard exploits the Internet's scanning abilities to monitor its operating environment. For example, Digitimer utilises the Internet to download information about its competitor's product specifications and monitors their progress in product development. In the same vein, it also uses the Internet to scan its environment for information on developments in technological fields and for other information relevant to its businesses.

From examination of Digitimer's use of the Internet it appears that the firm's understanding of its business use is polemical. In some cases the firm utilises the Internet's virtues quite effectively wherefrom it appears that its understanding of the Internet's versatility is clear. But, on the other hand, the issue of its non-use of the technology's most important property (i.e.interactivity) raises the question of the firm's depth of understanding about it.

This dichotomy may be explained from the perspective of the owner-manager's psyche or his mind-set. Although the owner-manager is cognisant of the realities, he is too content with his present situation and thus is less ambitious to push the matter further and content to perpetuate the current situation.

The effect of interaction between the Internet and Digitimer's organisational activities is depicted in a matrix as shown on Fig-K.

Part Three:

Re-Contextualising Analysis: Recontextualising the Fractured Insight

Contextualisation of the Case of Digitimer Limited

1. Maintaining coherence and consistency of existing provision (i.e. existing markets, products, processes activities):

Digitimer Limited operates within the specialised market interstice of medical electronics. The firm is family owned and has been operating within this market sector for two generations.

The products and services Digitimer offers are specialised in character and because of the life saving application of these products the quality and standard of them are strictly monitored and regulated by the Medical Devices Directorate. To the new entrants to this market segment, therefore, those rules and regulations act as a high entry barrier.

The emerging holistic picture of Digitimer's operating environment is that the high entry barrier along with limited market space deters newcomers resulting in a medical electronics protected market space for a limited number of suppliers/manufacturers.

Digitimer therefore operates within a seemingly stable environment as a specialised neurological equipment supplier to its own loyal customers. To Digitimer the market is therefore benign, stable and repetitive, but limited.

Within such an environmental setting Digitimer's management justifiably adopted a production process that is neither wholly automatic nor totally manual. For example, the firm uses semi-automatic production machines but on the other hand adopted a computerised stock control process. The firm has the expertise of SMD processes but does not use SMD technology in its products. It appears that due to specialised applications Digitimer's products are always built to customers' specifications and requirements.

Digitimer therefore operates within an apparently stable environment manufacturing and supplying specialised quality products to its loyal customers. The nature of these products dictates the market space. It is the existence of clear though implicit (i.e. by actions) parallel differentiation and scope strategies which are providing a coherence and consistency of existing Digitimer markets, products and processes provisions. A clearly identified coherence centres on differentiated products in terms of quality as 'fitness for function' as perceived by Digitimer's customers, and in terms of a scope focus upon customised provision consistency is achieved in terms of communication of the firm's coherence in the unique 'professional forums and gatherings' which the idiosyncratic 'competitor friendly' sector has evolved. ICT has also played a significant part in the maintenance of this coherence and consistency.

Those environmental restrictions within the sector do, however, also impose limitations on Digitimer's application of information technology. The firm tries to use IT for all possible internal applications from computerised manufacturing (e.g. PCB and circuit design activities) to stock control, office administration and so on. As an external application it uses the Internet for product advertising and communication purposes.

However, in the context of IT applications one key potential use that Digitimer's management is still overlooking is internal networking of its IT equipment. By doing so the firm could be able to create a faster flow of information both vertically and laterally, resulting in a vast improvement in organisational processes leading to improved productivity. This, in turn, offers itself in terms of enhanced efficiency to underpin and facilitate maintenance of coherence and consistency of existing provision, and in terms of enhanced learning to underpin future strategic development.

2. Effecting strategic adjustment to existing markets, products and processes activities:

Existence of organisational planning process: It is held that if the environment is stable and benign organisational activities of a firm become repetitive and mechanistic while the organisational culture becomes ritualistic. In such an environmental

situation the rational long-term planning model is ideal for application because of the foreseeability and predictability of the future events in such a situation.

Seemingly the case of Digitimer unfolds the existence of such an environmental condition where the firm has ensconced itself within it with its specialised product range and its own group of loyal customers. The firm is therefore arguably well placed for the spontaneous growth of a rational long-term planning mode of management. However, as the case analysis of Digitimer demonstrates no formal long-term planning processes exists within the firm.

With the apparent predictability of customer/market demands and stability of the customer-base the firm's main focus is meeting its customers' requirements. The strategic approach of the management is focused on reviewing customers' demands/requirements on an 'as it comes' basis and this process is underpinned on the premise of direct feedback from customers.

Information oriented marketing processes: Thus Digitimer does have a form of planning process in place. The strategic mode of this marketing process is flexible rather than formal. It is flexible in that it is based on a 'to act' basis of information 'feedback' from its customers and a focus on the 'from here' not the 'to somewhere' rational planning model. The vital part of these processes of Digitimer is therefore information. But on information which facilitates the building from the 'here and now' not upon some speculation into the 'future unknowable'. The firm either acquires the information at meetings and conferences or from the firm's internal actions via various communication media especially the Internet in the form of queries. The management therefore 'learns' from customers and gears the firm's resources to 'act' accordingly in order to meet customers' requirements, building out of its existing competences and successes of the firm to date.

Digitimer therefore unconsciously follows a learning path comprising of 'discovery', 'choice' and 'action' (Stacey, 1991, 1995) modes in its management processes. The whole process is based on a series of informal and fragmented organisational activities but the 'fragmentation' is coordinated into a coherent whole through a learning focus on the 'now' of existing capability and provision.

A key issue is that of whether the potential exists for Digitimer to consolidate its fragmented information based organisational activities by reshaping them into a more organised and formal form. This may include:

Computerisation of internal processes: Possibilities exist for warehousing, computer-based invoicing, sales records and customer details such as nature of their queries and requirements, frequency of transactions and other relevant information that would be helpful to create useful customer profile to facilitate a market forecast.

Networking of Computers: Improvement of the administrative functions of the firm through networking internally all computing equipment and connecting this network to the Internet. In such a case customer's orders, queries, invoices and store inventory information would automatically be distributed, thereby bypassing the conventional administrative delays and resulting in reduction in overheads through less value chain links.

Potential application of the Internet for interactivity: A wide range of possibilities exist for Digitimer to utilise its extant Internet expertise from receiving orders to after-sales support and maintenance of advice for its customers. For example, with existing expertise and experience in Internet usage, potential exists within the firm for developing its W3 portal to an interactive marketing media where the customers could find a system, or could re-design an existing system in virtual mode on the Net and place their orders/queries through the Internet. Opportunity also exists for creating an on-line system to provide 24 hours help and information accessible by existing/potential customers.

Management decision support: The above consolidation of information activities also raises the possibility for the provision of further owner-manager potential to analyse a problem from different perspectives and to select appropriate courses of actions. Such a consolidated information system and a database may empower the management to interpret a situation more accurately and help in finding a solution more appropriate and applicable to the situation. Here the potential is to facilitate creative strategic thought processes as opposed to 'in the box' rational, logical strategic thought and development processes.

3. Organisational Learning as a key to strategic development processes:

For Pedler et. al. (1989) a learning organisation is "an organisation which facilitates the learning of all of its members and continuously transforms itself" in the process. In line with their learning model, Digitimer's copious use of computer technology in almost all of its internal organisational activities along with its attempt to utilise the Internet technology reflects Digitimer's culture as somewhat orientated towards a learning organisation.

Senior Management and organisational learning: In an organisation encouragement from the senior management filtered down the corporate ladder stimulates learning practices of its members. In Digitimer the visible sign of such an encouragement comes in the form of sponsorship for further education for its employees. This act clearly demonstrates Digitimer's management vis-à-vis its owner-manager's understanding of the place of learning in the processes of his organisation's survival and future progress and thus his focus on the learning through upgrading the knowledge-base of its employees.

Fostering a climate for learning: Within a true learning environment the members of an organisation are able to think independently and creatively. In an Internet oriented learning climate the members of the organisation are able to learn by themselves through experimenting with it and thus able to learn from external environmental agents. Seemingly, in Digitimer the management fosters such an internal climate. For example, the firm's members are encouraged to learn by themselves. To facilitate the process the owner-manager created and maintains an informal climate within the firm.

Opportunities for everyday learning: Such a learning climate offers the employees opportunities for learning from day-to-day organisational activities like interfacing and contacting external environmental agents. Digitimer's environment provides its members opportunities to enrich their knowledge through learning from its customers, suppliers, distributors and sub-contractors through sharing each other's views and ideas when they meet at various meetings and conferences.

In the context of the Internet, the potential for learning opportunities greatly increases due to the possibility of coming in contact with those business partners and environmental agents. The potential is for learning activities from consulting websites of sub-contractors, suppliers and competitors and from on-line queries from customers and the scanning of competitors' web-pages for information which can turn out to be daily rituals or embedded in daily activities.

Environmental monitoring as a key to organisational survival process: Like any other active organisation Digitimer is analogous to a living being therefore, like other living beings, it inherently is an open system. It is imperative that an open system must have contact with its environment for its survival. As an organisation Digitimer is no different in this context.

Commensurate with living organisms, organisations learn from their environment and readjust to it for their survival. Any active organisation therefore learns directly or indirectly from its environment to survive. In this context Digitimer does not practice organisational learning in a formal manner, but in a natural organic manner.

For example, its activities such as attending conferences, professional gatherings, study of conference proceedings and trade journals are indicative of various environmental sources the organisation endeavours to naturally learn from. Those conference and meeting venues are the places where Digitimer's management comes in to contact with its competitors and customers and learns about their progress and future requirements respectively. On the other hand, queries generated by advertisements placed in trade journals also act as sources of understanding customer behaviour and their changing requirements.

Potential of the Internet as a learning vehicle: Thus, although the firm does not have an explicitly stated intentional organisational learning activity, such an activity is embedded deep down within the firm's culture.

In the context of its learning processes Digitimer, however, limits its use of the Internet to monitoring competitor's web sites or downloading of conference proceedings. With its long history of computer use along with its competency in high

technology there can be little doubt in its ability to understand the potential of the Internet in the context of business development applications. With its technological competence the firm is capable of using the Internet and the W3 for organisational learning purposes and enhancement of organisational learning capabilities.

Digitimer therefore has the abilities and resources to tap the attributes of the Internet as a business media and business development facilitator. With all its competence in information technology the firm has organisational attributes to underpin the potential of this technology as a media for ongoing learning process through interactivity. For example, potential exists for the firm to establish internet-based network-link with its business partners like suppliers and sub-contractors, and especially with its customers so as to communicate with them on an ongoing basis to exchange ideas and to learn from each other about their respective strengths and weaknesses so as to rectify shortcomings by mutually re-adjusting internal methods and processes.

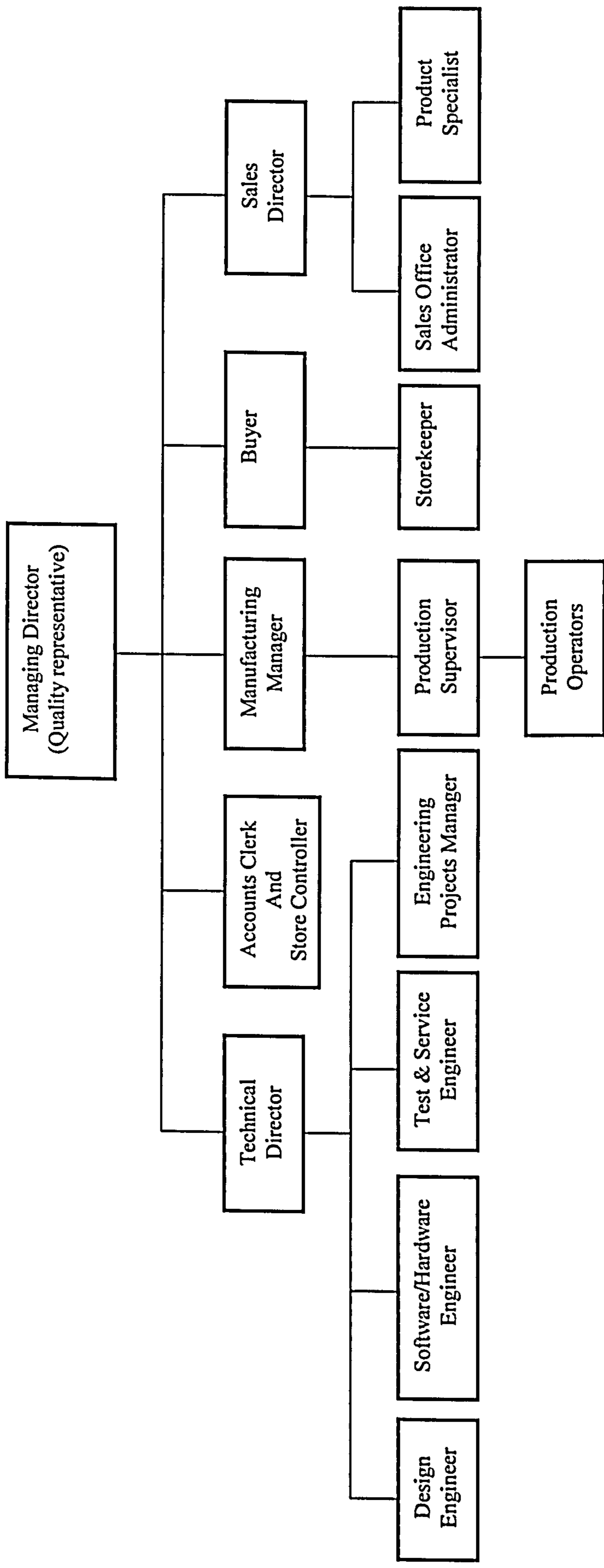
Opportunity exists to continue this process of adjustment and re-adjustment on an ongoing basis. There are possibilities to induce such a learning process at three different levels. Firstly, at organisational level: where necessary readjustments may result from learning about inexorable environmental changes. Secondly, at management level: they will 'discover' the requirements of necessary change processes evolving out of the insight gained from data/information input. Thirdly, at employee level: where the employees will be able to upgrade/update their knowledge base from their everyday interaction with the firm's environmental agents via the Internet, and of course be 'feed-ins' to the other two levels.

Digitimer maintains a non-growth policy so as to secure, and maintain its future stability through focusing more on its existing customers and existing core capabilities. From this point of view, possibilities exist to create closer customer-vendor relationships with its business partners by reorganising and intensifying its IT activities, not least by increasing and strengthening its internet based activities as outlined above.

APPENDIX-I

DIGITIMER LIMITED

ORGANISATIONAL CHART



Chapter Ten

*The Case of
Seltek Limited*

CHAPTER TEN

CASE STUDY ANALYSIS: CASE OF SELTEK INSTRUMENTS LIMITED

Seltek Instruments Ltd., Standstead Abbots, Herts.

Part One:

Descriptive Analysis:

Introduction:

Seltek Limited was founded in 1976 by Mr. William N. Hooper. The company started its business as a distributor of various measurement instruments such as gas, electricity, temperature and pressure.

The distribution business of Seltek Ltd. progressed unhindered until the UK government's commercial policies were integrated with EU directives for business deregulation in 1990. Due to this change in the external environmental situation Seltek's management decided to concentrate more on the electric power measurement market. Thereafter the firm focused its business interests on this market sector.

However, early in 2000 several simultaneously occurring incidents led Hoopers to reorganise their business completely. Firstly, William Hooper's retirement was looming. Secondly, the management wanted to change the course of their business in a completely new direction. They wanted to expand into manufacturing business. Finally, was the fear of losing their market to Energy ICT- a Belgian firm in the same business, whose products Seltek was a distributor of. At the same time Energy ICT was in the process of expanding their business into the UK. The cumulative effect of

all these factors led William Hooper's son Tim to the decision to merge their family business with Energy ICT.

At present Tim Hooper is the acting managing director of Seltek Limited. This organisation now manufactures electric energy measuring systems. Seltek Ltd. along with four similar companies operating in various European countries comprises the Energy ICT group. Seltek Limited acts almost independently and its management makes most of the decisions about the running of the business without any interference from the group's Belgium headquarters. The resultant situation is one of Energy ICT acting as a stakeholder of Seltek Limited.

The total workforce of the Energy ICT including Seltek is 45.

Seltek's operating environment, the Power Management Sector:

The idea of an energy management system is to collect data about the behaviour of electric power consumption by a consumer. The analysis of the collected data divulges information that helps to control the purchase of bulk power and to manage the consumption of electric power in an efficient and economic manner.

Obviously, organisations that use a considerable amount of energy in their day-to-day business activities usually require such a power management system so as to lower their overheads. Therefore, large electric power consumers such as supermarkets, manufacturing complexes, hospitals or universities need such systems.

In the UK there are several firms operating within the power management market sector. With the use and application of latest electronics technology and computing devices in manufactured products this sector obviously constitutes a sub-sector within the wider industrial electronics domain. The products of this sub-sector are specialised and expensive. The consumers of those products are consumers who purchase electricity in bulk amount and consume a large amount each day. Obviously, such a target market has a limited number of customers with their limited demands for such products. With a limited number of customers therefore the environment is obviously competitive. Moreover, competition leads to more and more use of latest technologies

by manufacturers to get a market lead in this sector. In the end, the cumulative effect of all those activities is an operating environment that is volatile, unstable and protean. It is such an environment that Seltek Limited operates at present.

The Company's Products and Markets:

Today Seltek's main business is to sell, service and maintain electric energy management systems. At its Standstead Abbots premises it builds systems according to its customer's requirements. It also sells off-the-self single units of electric kWh energy meters, metering panels or other relevant items on a retail basis.

In Mr. Hooper's words: *"it supplies total metering solutions customers from small buildings to multi-national organisations with multiple sites across Europe. Our combined measurement expertise created a company with the most complete energy and utility monitoring services in the UK"*.

In other words, Seltek Ltd. offers: *"simple kWh meters and portable energy meters to complete installation of multisite, multi utility energy management systems that include costing, automatic communications, multi-user software and general monitoring"*. Services it offers include specialist metering installations, commissioning, testing and on-site maintenance.

Within Seltek's equipment portfolio, is a Multi function energy information meter with JBUS/MODBUS communication protocol, a RTU Plus 32 input logger data logger, a RTU+ Server 32 input logger, and a WEB Enabled & Ethernet Data Loggers and EiServer - energy information software to complement those intelligent energy data loggers.

Utilising data loggers along with software Seltek offers sophisticated remote monitoring and energy control systems with full internet, web server and email capabilities, where all the stored data can be transmitted to a customer's intranet or network by means of a modem, RS 485 or RS232 communication options.

At present Seltek Ltd. designs and integrates energy management systems. Today the technology it uses is sophisticated and complex. Most of its equipment is computerised remote-controlled intelligent systems.

Through its long-term engagement in the measuring instrument distribution business the firm has acquired substantial knowledge of efficient energy management systems for bulk energy users, particularly from customers who purchase bulk electric power from power supply companies and manage their own internal energy distribution. For such customers an efficient distribution of power is imperative for their economic use of electric power.

Seltek therefore, targets bulk electric power consumers, such as hospitals, manufacturing companies, universities, large real estate complexes, super market chains and leisure facilities as its potential customers. For example, De Montfort University was an earlier customer of the firm. The firm has recently won contracts from two large supermarkets.

People as Resources:

- *Employees:*

At present Seltek Ltd. employs 13 personnel. The number of workers has remained more or less constant. There have been no redundancies. The workforce includes the managing director, sales personnel, installation engineers, administrative staff, and a part-time financial controller. Mrs. Carol Hooper is the assistant accountant. Another staff member will join the firm in a technical support role in the near future.

- *Reporting Structure:*

Despite the modest size of the firm Seltek has a well-organised reporting structure with a shallow layer of management. This is quite comprehensible from the point of view of the business activities the firm is in at present. This layered organisational structure is necessary for the smooth operation of the firm.

The pivotal individual at the top of the structure is Tim Hooper, as the present M.D. He took over following his father's retirement a few years ago. Tim Hooper makes all the decisions regarding the running of the firm and decides on the direction of the business. It was his sole decision to merge with the Energy ICT group last year.

A hierarchical chart showing the structure of the company is provided in the Appendix at the end of this text.

- *Education and Training:*

Seltek's employees have a farrago of educational qualifications. For example, Tim Hooper has acquired an HNC in Electronics. While Richard Morgan, a sales engineer has a degree in production engineering. Carol Hooper, the acting assistant accountant, is currently studying accountancy at a local college. The firm also sponsors a technician at the Turnford College on a technician course on a day-release basis. It also sponsors a technical support engineer on an evening course.

The firm does not have any formal short- or long-term training strategies for its employees. The size and resources of the firm inhibit such an approach. Moreover, the firm has past experience of employees leaving after completing their training. However, Tim Hooper always keeps an open mind about his firm's future training activities.

All Seltek employees are trained in multiple tasks. In Mr. Hooper's words: "*his firm cannot afford to run without it. An organisation of Seltek's size has got to use its human resources efficiently and effectively.*" Thus, an employee is given proper training in a particular skill, in a trade or in particular equipment. This training may take place at other group members' premises if required.

In the context of recruitment, the management faces difficulties in finding properly trained sales staff in its particular line of business.

In the past, the company hired external consultants to upgrade its quality control systems to ISO 9000 standard. It also hired consultants to check and upgrade its Health and Safety procedures to bring them in line with both UK and the EU standards.

Seltek Ltd. is a member of the local Business Link. However, in Tim Hooper's opinion, its role in the context of his firm is polemical.

Production Processes:

The firm only designs and manufactures custom systems for its customers. As each customer's energy consumption is unique to its situation it is understandable that requirements for their energy management systems will differ from each other and thus be unique to each particular customer.

The production cycle starts with the technical support and installation team's visit to customer premises following confirmation of an order. After two visits the teams draw up a plan for installation and procure respective system components, including software, from various suppliers. The system is then integrated and tested in-house. The cycle ends with completion of installation and testing of the system. In the case of larger systems, the system is built at the customer's premises.

Seltek Ltd. procures its system components largely from other ICT group members. However, it also has vendors in France and Italy. This base production process was perfected following the firm's entry into the energy management business.

Finance and Financial Control:

According to Tim Hooper: "*The annual turnover of Seltec Ltd. for the last fiscal year was just under one million pounds*". The company has experienced steady growth in its business throughout the last year with turnover of £1.2 million expected for the current fiscal year.

The firm has a financial controller looking after its financial affairs. He works for two days a week. As discussed above, Carol Hooper works as an assistant accountant for the firm. It is expected that Mrs. Hooper will eventually takeover from the financial controller in a couple of year's time when he ultimately retires. It is for this reason that she is attending the accountancy course at the local college.

The firm often borrows money from its bank to finance its projects. At present it has a running overdraft account. *"When the projects are big and order book is full"* the management feels the need for financial support to underpin their completion. The reason behind maintaining an overdraft is that in the past financial constraints have stymied further expansion of the business. The firm has no problem in raising such finance from its bank because of its link up with the Energy ICT group.

Competitors:

At present, Seltek Ltd. has a number of competitors operating in the same energy management market segment. Two of them are large multi-national organisations of international repute- Slumberger Corporation and Siemens Ltd. These two organisations mainly compete in the hardware domain. On the software front the firm's competitors are Stark Ltd., Team Energy Ltd., PRT and Northern Designs. These latter firms have gained competence in developing dedicated software for energy management systems. They have been developing such software since 1990 and their main strength lies in their ability and experience in writing complex software for any such system. In addition to these firms there are a number of agencies competing for a share in this market sector.

A 'competition dichotomy' can, however, be said to exist in that firms who compete on the software side actually buy Seltek's hardware to complement their systems. For example, Team Energy procures Seltek's hardware to complete its system. The main competitive advantage of Seltek is its complete self-sufficiency in both hardware and software fields. This is due to its membership within the ICT group where different member companies produce different hardware and software components. Clearly, this situation gives Seltek a competitive edge and some degree of control over some of its competitors.

Holistic Development and Marketing Activity:

Seltek Limited started as a family owned firm. And, as discussed above, last year the firm joined a group of companies with their head quarters in Belgium. The firm still maintains its independence with little or no interference from group head quarters.

Seemingly, the firm has not lost its individuality as a family owned small firm. Consequently, an aura of informality persists within its internal operating context. Within the firm both Mr. and Mrs. Hoopers work produce a distinct family orientation. And given that it is expected that the accounting and financial activities will be the responsibility of Mrs. Hooper in the near future a reinforcement of family focus and control is likely.

The working environment is also flexible. The management continues to encourage a multi-tasking work environment. For example, the M.D. himself designed the web-site for the firm. Although the hierarchy shows a layer of management it appears that this division is thin. Sometimes the M.D. works side by side with his managers and other personnel to complete assignments on time.

Moreover, management does not have a formal planning instrument in operation at present to formulate its future plans for growth or expansion. According to Mr. Hooper, this planning would be ineffective in his firm and its operating environment. Seltek operates in a niche market sector, and within the electrical power management sector the market has limited potential for further growth. With limited number of customers and with a number of competitors competing to grab a market share Mr. Hooper is cautious about investing to expand into a market which has its own constraining parameters.

Despite the firm's strong market presence with its ability to supply a total power management system complete with its own produced hardware and software, and with its installation capabilities, Seltek does appear to have some inherent weaknesses. It lacks capabilities of managing a large project on its own. This shortcoming comes from its dearth of experience in the field of project management as well as the absence of a management team with strong project management background, especially,

relating to large projects. It also lacks the expertise and properly trained personnel to create and maintain technical documentation such as technical-records and specifications. How the management will address these problems remains to be seen. In the context of an organisational learning dimension of development, Seltek's management maintains regular contacts with its existing customers and discusses their present demands and future requirements with them. It also learns through studying energy journals, competitor's advertisements and their brochures or their product update leaflets. The firm also examines the functionality of competitor's working systems installed in its customer's and potential customer's premises (a kind of 'reverse-engineering').

It also learns through regular communications with its customers by means of telephone, fax and emails.

Inherent Marketing Approach: As discussed above, Seltek Ltd. started its business as a distributor of various measuring instruments. It later focused on the distribution of electrical power management equipment only. Recently it diversified to manufacturing those systems as well.

The firm built up a niche in the power management market over the past ten years. Over the years it has acquired substantial expertise and knowledge about customer's requirements and potential customers in the UK. At present the firm only operates in the UK market.

Seltek Limited has a strong sales force to push their products into the relevant market sector. The marketing strategy of the firm is based partly on a "*tapping on the door*" policy. A Salesman tries to get in touch with a potential customer organisation and then seam his way up to the "*right person*" who is responsible for the power supply, its maintenance and overall management. Then a standard selling technique follows such as impressing and convincing the person(s) concerned. Often customer's themselves approach Seltek with an enquiry for a total system or for a discrete component. Also, at times competitors approach the firm to purchase system hardware to provide them with requisite developed software to complete their own system.

From the above 'mixed approach' it appears that at present the firm does not have a clear marketing strategy not in a marketing oriented sense. This may be due to the fact that the firm recently diversified into the manufacturing business where the market is competitive and the firm needs time to consolidate its position within this niche market segment as a quality energy management system supplier in its own right, before it can use marketing tools strategically to create competitive edge.

Seltek's management does, however, already have a market intelligence instrument in place to monitor the market situation. It studies relevant monthly magazines. It also regularly procures competitor's product brochures and leaflets to scrutinize their progression. This is a clear indication of a build up of a marketing-orientation which may displace the predominant sales-orientation element that exists at present, and is embedded within the organisational learning type dimension discussed above.

Product and Price: Seltek offers a variety of products from a discrete energy meter to complete energy management packages. In the context of the pricing of its products, it always endeavors to as far as possible be competitive. However, the firm always puts the quality of its products and services as its top priority: management's mindset is that compromising on quality ultimately dilutes both profit and goodwill of the company.

Distribution: The firm does not have a distributor for its products. The reason behind this is twofold. First of all the firm does not have any overseas customers, as its prime operating domain is the UK market. Secondly, the firm supplies complete systems to end-users. This provision requires that customer's premises and their electrical distribution system are surveyed and on the basis of those surveys systems are built. It is a specialty job that could not be done through a mediator. The direct contacts with end-users eventually reduce the downstream value chain links making products/services financially attractive to customers.

In order to expedite the delivery quickly, Seltek maintains an off-the-self inventory of discrete products needed for a system, or to meet a customer's requirement for a discrete item (e.g. an energy meter).

Promotion: Seltek operates in a niche market segment. There are a number of firms operating within this sector competing with each other.

To maintain its market share Seltek therefore regularly advertises in three energy journals which are published every month. However, to minimise costs it advertises in each journal every three months. Seltek also uses mail-shots to inform its existing and potential customers about latest products and services it offers.

For promotional purposes Seltek's management participates at annual energy exhibitions held at various domestic venues. It also has a W3 portal displaying products and services the company offers. 'Promotion' is also subsumed in the firm's '*tapping on the door*' sales policy/sales force activities discussed above.

Market Research: The company does not have any formal market research instrument in place. However, as already discussed, it maintains contact with its existing customers for feedback. It also regularly monitors the changes in the market and developments in its operating environment through studying the relevant energy journals. It also monitors its competitor's progress by acquiring and researching their product brochures, leaflets and studying their advertisements or monitoring their web sites on a regular basis.

Use of Information Technology:

With regard to the use of the information technology, the company has a history of using computers. According to Tim Hooper, the organisation has been using computers since they were first commercially available in the UK. The first computer the firm procured was a Z80 processor based Commodore model. Gradually, it moved to IBM PCs when they became available in the early eighties.

At present Seltek has at least 20 PC platforms. All of them are networked through a high power server. The firm extensively uses various Microsoft software. It uses Microsoft Office 2000 to Sage Accounting and Payroll software packages. It also uses both Microsoft NT and Windows 98 system software.

Most of the employees are capable of using computers. Whenever a new software package is installed the employees acquaint themselves with that new software tool.

The underlying reason for such intensive computer usage and employee capability in this respect is that the firm's products are high technology based systems. Those systems are microprocessor-based intelligent instruments capable of communicating with remotely based computers for high speed data transfer based on various IEEE approved data communication protocols. It is therefore vital for relevant employees to keep themselves up-to-date with those software applications.

The use of the Internet: The systems Seltek produce are meant for collecting real-time data on the consumption of electric power and to transmit those data, or to store them to be retrieved later, by means of various data transmission protocols or through using the Internet.

The firm is therefore well acquainted with Internet technology. However, the web site was actually only erected 3 years ago. Tim Hooper himself designed the site.

The purpose of the web site is to provide a portal on the W3 for presenting the firm's activities to potential customers and to display and advertise its products and services. The web access is also used to monitor the change in the environment and for monitoring competitor's products and progress.

The e-mail facility is used extensively at present for maintaining contact with other group members and with its Belgian headquarters. It is also used to transfer data to its customer's computers which the firm collects on their behalf for energy management. However, The Internet is mainly used by the firm for transferring internal data and information such as circuit and engineering drawings and technical information between various group members. The Internet is also used frequently to download software upgrades from the group's Belgian site. The firm sees that its usage of the Internet is gradually on the increase for those purposes. But the firm never uses the Internet for financial transactions.

The present ISP of the firm is the ISP company Global Internet Ltd. Global Internet has been providing the services for the past 4 years to Seltek. The annual subscription for this service is £200. Although the membership includes 24 hours access to the W3 and an unlimited number of e-mail addresses and 20MB of web space, the services charge is quite substantial compared to today's standard. The firm also has to bear the telephone charges. The management is therefore thinking of switching over to BT's ADSL high-speed services. Seltek will later be connected to the group's own Net which will be available in the near future.

In Tim Hooper's opinion much 'spoken and discussed' potential of the Internet is "purely academic". Because up till now the Internet has been unable to offer the facilities its proponents proposed. He further adds that "*browsing the Net for information is quite time consuming and irritating*". He thinks that "*to make the act of locating the desired information less tedious and less time wasting*" proper directory type segmentation is required. He further feels that some control structure should be imposed on Internet users in the form of some kind of registration to keep track of users and to reduce misuse. He views the e-mail facility as a media for informal communication. Because in his experience: "*e-mails contain spelling mistakes, their formats often lack the formal structure of an official letter or document*". Therefore, in his opinion, much needs to be done before the Internet could be accepted as a formal media for business.

Part Two:

Fractured analysis of discrete areas of Seltek's key IT/Internet activities using the overall holistic contextual insight of the descriptive analysis as analytical context:

In the following section Seltek's strategic, operational and processual activities are discretely analysed in order to unfold the Internet's contribution to those organisational activities. The analysis further reveals the influence of this technology to their development processes and the depth of integration of the Internet within those organisational functionalities of the firm.

In this context, the above descriptive analysis of Seltek Limited's organisational activities is used to analyse further so as to get an in-depth picture of the use of IT and the Internet by the firm. In this respect, various organisational activities were discretely examined in the light of IT and the Internet usage. To perform this analysis the organisational activities were 'fractured' in respect of their use of the Internet.

'Fractured' Insight:

(a) An Instrument for Communication with Group Members:

From the above descriptive analysis it appears that Seltek Limited comprehensively uses the Internet to maintain contacts with its other group members. The firm's use of the Internet for communication purposes and, more importantly, its use to exchange information with the firm's overseas group members about product components and software could be seen as the first step toward the interactive use of the Internet (Deighton, 1996). Seltek's use of the technology for communication purposes with its group members is an example of its use to exchange information (Angehrn, 1997). In this context, this inter-organisational communication process added another dimension to Seltek's organisational boundary in that, over and above its physical boundary, it has created a virtual organisational boundary that extended across continental Europe (Dastur and Angelides, 1997). Moreover, in many ways this facilitated communication can be seen as an underpinner to more effective two-way control between Seltek and the group.

(b) A Direct Distribution Channel for Products and Services:

One of the business functions of Seltek is collecting and delivering data over the Internet and is a classic example of its use of the Internet to provide a direct service to its customers. Drawing upon Angehrn (1997) and Ghosh (1998), it could be considered that the firm is ingeniously exploiting the Internet as a 'channel for commerce'. Seltek is using the Internet in an innovative way to establish links between its customers and itself to provide a service to collect and deliver a merchandise (Angehrn, 1997) in the form of data to its customers. In doing so it bypasses value chain links (e.g. distributors) in a novel way to serve a group of its

'target' customers (ibid). This reduction of value chain links in turn helps the firm to reduce prices of its merchandise enabling it to become more competitive (Porter and Miller, 1995).

(c) Mode of Interface and Control:

Seltek procures various system components from its other group members and from its continent based vendors. In this respect it exchanges relevant technical information and specifications prior to ordering.

In this context, the firm uses the Internet to establish fast communication links with its business partners to provide them with requisite information about its requirements and to monitor the progress of orders. This behaviour highlights the fact that Seltek uses the Internet to exert control over its vendors (Hoffman, 1996). On the other hand, this action also shows Seltek's use of the Internet as a marketing tool (Ghosh, 1998).

(d) Financial Management Tool:

Years of business activity has helped Seltek Limited to acquire insight into the importance of cash flow for the smooth running of the business. This understanding is reflected in its hiring of the services of a competent and experienced financial controller to look after its financial matters.

However, with regard to control and financial transactions the firm follows traditional paper-work based processes. This highlights Seltek's reluctance to accept Internet-based on-line financial transactional processes as it has neither present nor future plans to resort to on-line banking or financial transaction methods.

This reluctance grew out of the owner-manager's apprehension about the maturity of the Internet technology. His comment about the Internet as 'purely academic' reflects his views. This apprehension grew out of his feeling of insecurity due to the Internet's open infrastructure (Angehrn, 1997; Levitt, 1995; Cockburn and Williams, 1996).

(e) Information Board for Existing and Potential Customers:

King and Clift (1999) contend that the Internet is transforming the way of doing business. Hoffman and Novak (1996) suggest that to adjust with its changing environmental scenario a firm needs to change its marketing strategies when the tools of marketing are changing or have changed. On the other hand, for Deighton (1996), traditional marketing practices, based on Kotler's (1994) 4Ps (Product, Price, Place and Promotion) concept needs to be changed in the face of nascent Internet based commercial practices. It appears that, in parlance with the above concepts and views, Seltek is changing its marketing strategies. For example, in order to widen its market it has begun to advertise its products and services on the Internet-based W3 portal so as to reach not only its extant customers but also to communicate with a wider audience of potential customers.

The firm operates within a competitive environment where large and smaller organisations alike are vying for a market share. For Seltek, this precipitous environment acts as a stimulus to locate new ways of doing business. The firm therefore uses the Internet as an advertising media to woo more customers.

(f) Information Retrieval Vehicle and Change Monitoring Tool:

The descriptive analysis reveals that Seltek is operating within a precipitous competitive environment that, along with its technological nature, is always unstable and unknowable. Drawing on Stacey (1990), this situation can best be described as an unpredictable and 'open-ended' change situation. Within such an environment a formal comprehensive step-approach to environmental scanning is beyond the small firm's ability (Wyer, 1998) while, in such an environmental situation some form of scanning of the environment for information is extremely necessary (Wyer and Mason, 1998).

Barker (1994) and Fuller and Jenkins (1995) contend that the Internet's virtue as a cheaper communication media could be utilised by SMEs as a communication vehicle and as a tool for environmental scanning to gather information about the market situation, competitor intelligence and consumer demands and their tastes.

This justifies Seltek's comprehensive use of the Internet on a daily basis as a communication vehicle to communicate with its other group members, Belgium based Head quarters and other business partners.

The above views also support Seltek's use of the Internet strategically to monitor its competitors' web-sites with respect to their product development and its use to scan its own operating environment for information and to monitor changes occurring therein.

(g) A Technology Tracker:

Barker (ibid) and Fuller (ibid) assert that the Internet could be a doorway to SMEs for discovering new ideas and applications.

Parallel to those views Seltek's use of the Internet to scan its environment as well as its competitors' web-sites indicate its owner-manager's willingness to learn from its environmental agents. In this context, the firm's unstable and precipitous environmental situations act as stimulants behind its willingness to learn. The firm effectively adopts 'technology tracking' activities through utilisation of the Internet.

(h) An Organisational Learning Tool:

In an unstable and unknowable or open-ended (Stacey, 1990) environmental change situation it is necessary for an organisation to learn from its environmental agents (Wyer, 1998).

Seltek does not have an organisational learning instrument placed formally within its fold. That is to say, 'organisational learning' is not a formal concept recognised and explicitly and intentionally pursued by Seltek. The descriptive analysis, however, indicates the existence of such a dimension embedded within the firm's culture. For example, the employees are expected to learn by themselves about the application and use of extant and new and modified versions of software downloaded from its Belgium head quarters. On the other hand, the firm's liberal policy to allow its employees to browse on the Internet is indicative of the presence of such a learning culture within the firm.

In Seltek the employees frequently upgrade their knowledge-bases on various application software packages, external technological progressions and about situations regarding the firm's business partners, such as competitors, customers, sub-contractors etc., through downloading information about them via the Internet

This upgrading of employees' knowledge base can be explained, at least in part, as a 'double-loop' learning process (Argyris and Schon, 1978) if this learning and knowledge results in strategic adjustment to the firm's existing markets, products and/or processes activities.

Seltek Limited is using the Internet for various purposes. It has also discovered an innovative use of the technology as discussed earlier. However, despite this successful implementation of the technology in many fronts, the organisation requires to go some way before it will be able to fully exploit the advantages the Internet offers to it. The reason is that some elements exist within the firm that inhibit Seltek at present from exploiting the Internet's virtues to its full advantage.

One such inhibiting element is the owner-manager's understanding of the Internet as a whole. To him W3 is a melange of information. On the other hand, he views the Internet as an. 'informal communication media'. This is indicative of the owner-manager's paucity of training in, and his inchoate understanding of, the usefulness of the W3 as an information base or the Internet as a communication vehicle (Ahrens and Esquer, 1993; Motiwalla, 1995). Drawing on DSTi's empirical study (1998), on the adoption of the Internet by SMEs, those thoughts of Seltek's owner-manager act as barriers to progress in accepting the technology as a business media.

Arguably, explicit recognition and understanding of the concepts of the learning organisation and organisational learning may provide an appropriate guiding frame of reference to nurture a positive change in owner-manager mindset in this respect.

The effect of interaction between the Internet and Seltek's organisational activities is depicted in a matrix as shown on Fig-L.

Part Three:

Re-Contextualising Analysis: Recontextualising the Fractured Insight

Contextualisation of the Case

1. Maintaining coherence and consistency of existing provision (i.e. existing markets, products, processes activities):

From the above analysis a picture emerges about the organisational activities of Seltek Limited. The emerging picture depicts that the firm operates in the power management market while within this interstice of electronics market Seltek offers high technology based products and services. The case also unfolds the fact that scope within this market domain is narrow due to its highly specialised nature of products and services that are only required by a limited number of large organisations who consume a large amount of electrical energy.

Several small and large organisations operate within this sector making the competition precipitous. To maintain its existing market share and to expand within such a competitive milieu Seltek follows a conventional strategy of aggressive selling. Seltek management's reliance on its selling strategy reveals that its management's perception and understanding of marketing is selling (Bodde and Buchanan, 1985). On the other hand, at present the existing sales force and selling strategy appears to be one of the strengths of the firm.

Like any other organisation Seltek also has some inherent weaknesses. One of its significant weaknesses is lack of project management expertise and paucity of properly trained staff within the firm in this regard. Seemingly, at present this weakness is counterbalanced by its strength in its strong sales team and strategy and its technically competent staff.

Although at present the above counterbalancing of internal strengths and weaknesses of the firm are helping it to increase its market share (e.g. incremental increase in turnover) its management is unmistakably missing or overlooking an important

developmental issue. They are relying more on selling-oriented than on marketing-oriented activities. Seemingly, the firm has few explicit modern marketing activities at present. It appears that a gradual induction of a greater marketing -orientation may tip the balance of competition in the firm's favour.

From the above analysis it appears that in the context of markets, products and processes activities there exists a major gap in Seltek's organisational activities in terms of the void of any real marketing orientation. Besides having a strong sales team the firm also possesses a strong and competent technical team with good understanding of IT and its various applications such as the Internet.

For Seltek, coherence and consistency of existing markets, products and processes activities may lie in the making explicit of a marketing orientation currently dormantly subsumed in its existing technical and production activities. With a slight change in the strategic course the firm may be able to forge out a strong marketing team through combining its above two strengths. This new marketing team may facilitate Seltek to:

- (i) Make its presence known to its potential home customers through the Internet and W3 portal.
- (ii) Explore new overseas markets to promote its products and services and search for potential overseas customers underpinning the attributes of the Internet and W3 site. This enabling the firm to expand its market through creating a larger customer-base by reaching them first with the help of this new technology.
- (iii) Use the Internet to serve remote and/or overseas customers by retrieving and redirecting their processed and unprocessed data using the firm's expertise in this field. The third-world country based customers may be particularly focused in this context in that they lack requisite data processing and energy-managing capabilities of their own.

- (iv) Create an internet-based networking facility to facilitate a channel for ongoing dialogue with its existing and future potential customers about their problems, needs and future requirements.

2. Effecting Strategic Adjustment to Existing Markets, Products and Processes Activities:

Advantages of the existence of a formal long term planning model: The case of Seltek highlights that the firm's strength lies in a technically competent team of workforce and its elite sales-force. The management views the environment as an arena of precipitous competition where the customers can be owned by using 'hard' selling techniques. Seemingly, from the perspective of traditional strategy theory it would have been a great advantage to Seltek had it had a formal marketing planning framework built into its organisational structure to complement its extant strength as described above.

An Alternative Information Oriented Marketing Construct in line with Seltek's Operating Environment: However, the difficulty of having such a process within Seltek is that such strategic processes are based on the premise of a long-term benign operating environmental situation. The case of Seltek suggests that the behaviour of its operating environment is of an opposite polarity in nature. Although the reality does not favour formal rational long-term strategic processes as a viable option for Seltek, it does not preclude Seltek from formulating a marketing plan based on the premise of its extant organisational strengths and 'strategic practices'. These 'strategic practices' are in fact indicative of Seltek's incessant renewal of its course of actions based on customer feedback, market intelligence and competitor-progress scanning activities.

Although those courses of actions are more reactive than pro-active and are more 'follow the leader' than of a 'leader' type, they may be useful as 'feed-in' to an information-oriented learning process that in itself could be a component of some form of marketing planning process. Obviously, such a learning-based marketing process is significantly different in concept from traditional rational marketing processes.

Given Seltek's hostile operating environment alongside its internal strengths and weaknesses, the main actors in such a marketing approach would be the firm's sales- and technical-personnel who would act coherently, communicate with each other to share each other's knowledge and co-operate with the management in formulating, implementing and successfully developing a viable marketing plan. In such a case the following type scenario may relate:

- (i) The sales team would be responsible for categorizing various sales related documentation (e.g. sales queries, orders, invoices inventories so on) and information contained therein for ease of maintenance and quick referrals when required. And for the pickup of adhoc externally sourced insight regarding external change situations.
- (ii) The technical team with their technical competence would be responsible for formulating retrieval of data/information from external sources, their safe storage, maintenance and retrieval.
- (iii) The management would in turn analyse the scanned data and utilise the output in their ultimate decision making processes.

Bearing in mind the global trend with regard to organisations' increased reliance and dependence on information to achieve competitive gain (Porter and Miller, 1981), the above marketing orientation is focused on the premise of Seltek's operating environment, its internal resources, its abilities and its size-related attributes.

For Seltek the success of such a marketing vehicle depends on two important factors. Firstly, the co-ordination of activities of three human elements: sales, technical and management teams. Secondly, on the creation of an internal environment to maintain a constant dialogue with its business partners so as to realise changes occurring in the external environment in the form of changes in customer demands/tastes, government legislation, economic climate and so on. For a company like Seltek the success of such a marketing orientation is related to an efficient allocation and utilisation of resources since constant monitoring, environmental scanning or information retrieval

processes are expensive activities. In this context, selection of the Internet as the vehicle for information retrieval and management provides a suitable support infrastructure. The Internet will be capable of meeting many of the demands relating to information retrieval and dialogical learning processes as discussed above.

With its extant strong organisational attributes, as discussed earlier, it would not arguably be difficult for Seltek to develop such an internet-oriented marketing vehicle. However, on the down-side the owner-manager's mind-set and his understanding of the environment as a place of precipitous competition along with his perception of the Internet as a farrago of information (including its only viable application as an 'informal communication media') may constrain the nurturing of such internet-based underpinning from the effecting of ongoing strategic adjustment.

3. Organisation Learning as a Key to Strategic Development:

One school of academic thought draws parallel between a living organism and an organisation in that, similar to a living creature an organisation needs to adapt to its environment in order to survive and prosper. Thus, an organisation that has been continuing its activities over a period of time therefore learned to adapt to its environment. On the other hand, in a continuously changing environmental situation the adoption and consequent learning processes are continuous.

Seltek and Its Learning Processes: The case analysis of Seltek demonstrates how it operates within a precipitous unpredictable energy management sector. Seltek's growth indicates that some kind of learning activities already exist within the organisation that are embedded somewhere within its organisational fabric despite the absence of any visible sign of the presence of intended formal learning developmental approaches.

According to the organisational learning literature, a successful organisation's learning abilities are clearly and explicitly enhanced and supported by the senior management. In the case of Seltek there is no visible indication of such an active encouragement from the owner-manager beyond that of learning by doing. It is understandable that it is difficult for an organisation of Seltek's size along its size-

related constraining factors to allocate resources towards learning processes. But the case unfolds insight into the potential for Seltek to explicitly formalise learning actions already subsumed in its day-to-day activities.

Organisational Learning Through Self-organisation: The operating environment of Seltek clearly dictates a situation where learning is a pre-condition for any job within the organisation. The internal environment of Seltek is therefore geared towards a kind of 'self-learning' process. The expectations of the organisation from its employees are for them to continuously upgrade their knowledge themselves about new software or of an upgraded version. This is an example of existence of such a learning-type culture.

Learning Environment: The above employee self-learning orientation has inadvertently induced a 'double-loop' learning activity within the firm's cultural fabric. It is arguable whether Seltek is or could be truly a learning organisation by definition, but unfolding signs are such that there exists an environment where the employees are driven to learn. Within its limitations Seltek has therefore created an environment where its employees are allowed to choose freely the ways they would learn, what they would learn and what to learn.

The activities of the sales team (though categorised as 'hard' selling method) also contributes to the firm's knowledge base. Through direct customer contact, the firm learns about its existing and/or potential customer's intricate demands and market trends and specific requirements.

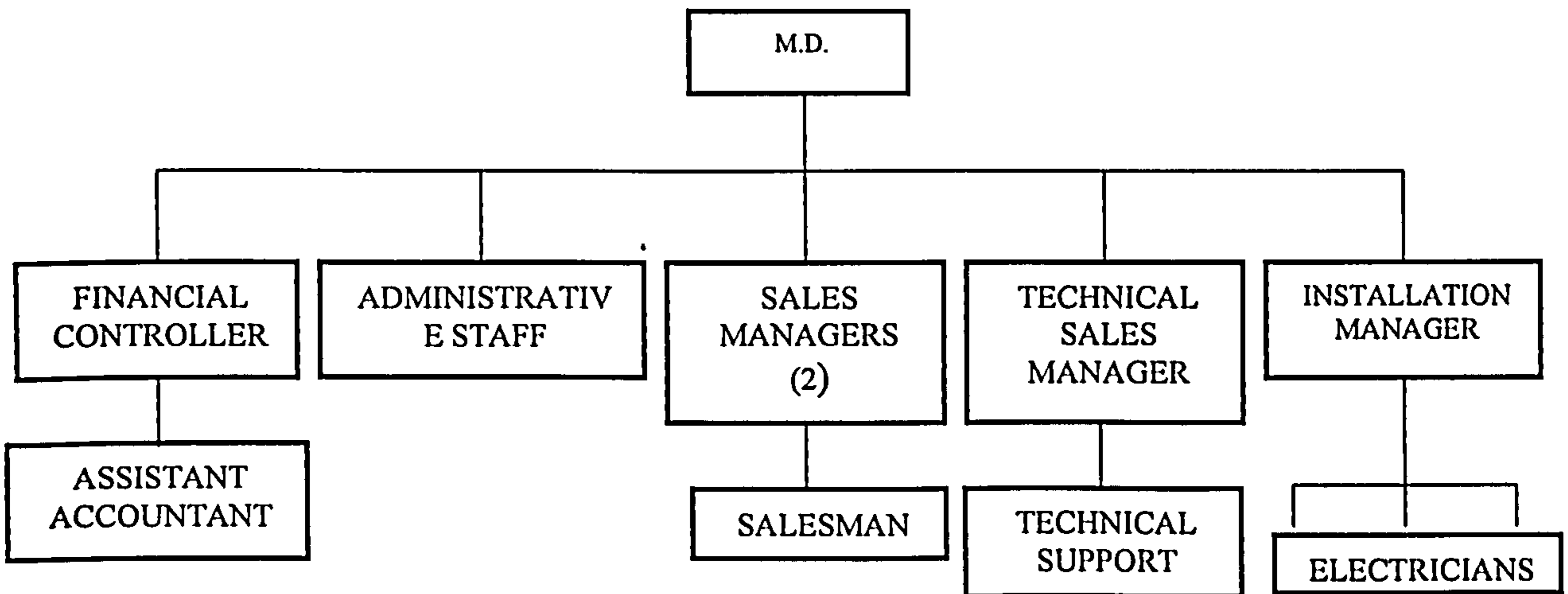
The utilisation of the Internet for environmental scanning purposes is also indicative of some willingness to learn from environmental agents. In this context, one of the daily rituals of the management is to maintain contact and to exchange information with its Belgian based headquarters and other European group members (who are also Seltek's suppliers of system components and software). This daily dialogue over the electronic media and exchange of ideas and views are indicative of learning activities.

At issue is the point that although Seltek does not have a formal conspicuous learning process in place all the key elements of such a learning vehicle are actively present

within its organisational culture. The top management appears to have the opportunity to systematically build all those fragmented learning elements and activities into an effective strategic tool to create leverage in achieving its organisational goals. The potential appears to be one of greater formalisation of its learning actions that are subsumed in the day-to-day activities of the firm and the intensified use of ICT to facilitate that learning.

APPENDIX-I

HIERARCHICAL CHART
SELTEK LIMITED



Chapter Eleven

*A Comparative Analysis of
ICT/Internet Strategy
Formulation Processes of
Participant Case Study
Firms*

CHAPTER ELEVEN

A COMPARATIVE ANALYSIS OF ICT/INTERNET STRATEGY FORMULATION PROCESSES OF PARTICIPANT CASE STUDY FIRMS

11.0 Comparative Analysis

11.1 The Issue of the Nature and Form of Operating Context:

11.1.0 Digitimer Limited

Digitimer Limited operates within the specialised market interstice of medical electronics. The firm is family owned and has been operating within this market sector for two generations. The products and services Digitimer offers are specialised in character and because of the life saving application of these products the quality and standard of them are strictly monitored and regulated by the Medical Devices Directorate. To the new entrants to this market segment, therefore, those rules and regulations act as a high entry barrier.

Digitimer's organisational planning process: Of the four case firms Digitimer's operating environment is relatively stable. A combination of its market interstice, specialised product range, stringent quality control requirements, loyal group of customers and 'competitor-friendly' competition culminates in a unique stable situation rarely visible within a SME sector. However, such an unusual environmental situation is also detrimental to Digitimer's future growth prospects.

Firms operating within such a stable, flat and comparatively benign, but restrictive, environment could attempt to embrace a formal long-term planning mode of management style and some typical repetitive rituals unique to the firm can take root within its culture (Burrell and Morgan, 1979:176). Digitimer's morning coffee break gatherings are a classic example of such a ritual.

Although environmental stability inevitably can foster some bureaucratic elements into an organisation's strategic decision making processes, such as total control of decision making mechanisms resting with the owner-manager(s), the dichotomy as evident in Digitimer's case is that there also exists some degree of flexibility within its decision making processes. This flexibility is conspicuous in its marketing strategy building activities. In this context, Digitimer's management follows a strategic route to 'act' on the basis of information 'feedback' from its operating environmental boundary-level agents and informants. In other words, Digitimer's marketing strategy is information dependant and fluid enough for re-orientation to meet the demands of the environment.

Marketing strategy: As with its environment, Digitimer's marketing strategy also widely differs from that of the other three case firms. Digitimer neither pursues an aggressive selling strategy like Seltek, nor does it follow 'opportunistic' marketing techniques as in Hanwell. Its marketing strategy, to some extent, resembles that of Cemac's in that both rely on a group of loyal customers for business. But unlike Cemac, Digitimer enjoys stability within its market sector. Apart from similarity in steady customer-bases Digitimer, however, shares little similarity with Cemac with regard to other organisational processes and activities. In fact Digitimer's operating environment differs widely from Cemac and the other two case firms. Its operating environment is comprised of 'friendly' competitors and a group of loyal customers forming a closed community within a 'closed' environment, while the other case firms operate within 'open-ended' marketing environments that are unpredictable and 'unknowable'.

Digitimer and Cemac both adopted 'non-grow' policies. They both intend to 'co-exist' alongside their competitors. Adoption of such a strategy of peaceful co-existence evolved out of build up of understanding of the operating environmental situations by the respective managements of Digitimer and Cemac. Digitimer's management understands that its products are specialised and the market is limited, that Digitimer's environment is community-like and thus stable. Whereas Cemac's environment is labile and precipitous where any attempt by Cemac to increase its market share would lead to fierce competition with its more powerful competitors of a nature that may be catastrophic for a less resourceful small family-owned firm like

Cemac. Therefore although the marketing strategies of these two firms have some similarities, the reasons behind their adoption are entirely different.

Use of ICT/Internet: Although Digitimer operates within a stable environment and such environmental restrictions to some extent limit a firm's use of ICT/Internet technology, it could be argued that Digitimer uses ICT in all possible manners as far as its environment permits. For example, Digitimer uses the Internet based W3 portal for on-line product advertisement, distributor list and uses the Internet for business-communication and intelligence purposes. On the other hand, its management is not only cognisant of the difficulties of unpredictability of a labile environment with an 'unknowable' future, but also takes necessary counter measures, at least to some extent, on the basis of feedback information to minimise the effects of such unpredictability. Again, the combination of factors such as customized product range, market sector and boundary-level activities compels the firm to maintain a two-way communication channel with its business partners to effect feed-back on its product range supplied, change in tastes/ and requirements of its customers and/or new developments in its market space. In this context, Digitimer relies on the ICT/Internet as a potential tool for communication on the W3 based channel. This Internet-based communication also, in turn, offers Digitimer a spatio-temporal channel for learning from its environmental agents operating on its organisational boundary.

In short, the holistic picture of Digitimer's strategic behaviour reveals that its management follows a strategic course of '*discovery*', '*choice*', and '*action*' (Stacy, 1991, 1993). And the whole process is a combination of formal and informal fragmented organisational activities and processes not observed in the other three case firms. The stable commercial stance of Digitimer reveals that such a strategic course fits well and is '*congruent*' (Burrell and Morgan, 1979: 178) with its present environmental situation.

A downside conclusion may be that the owner manager's perceived relative stability of the firm's business environment leads to an owner-manager mindset of predictable future. Here the benign environment could act as a non-stimulant and add complacency to the firm's organisational behaviour. A cumulative effect may be that Digitimer's learning process orients to a great extent toward a single-loop learning

process (Argyris and Schon, 1974). In such a final analysis, the firm's use of the Internet could be said to predominate toward a repetitive information gathering process. This said, Digitimer appears to be demonstrating some orientation toward establishing learning activities and relationship through interactive dialogue processes, and thus to be slowly learning-how-to-learn. It could therefore be argued that many small firm owner-managers will only begin to get the best out of information technology if they have full and explicit understanding of the small business strategic learning process. For example, double-loop learning requires the challenging of existing mindset and thus uncomfortable owner-manager activities of surfacing and questioning the assumptions upon which his/her mindset (world view) is based. From an IT standpoint, this requires facilitating dialogue and deep conversations to bring about the surfacing and questioning of existing world views.

11.1.1 Seltek Instruments Limited

Seltek operates in the power management market and within this interstice of the electronics market offers high technology based products and services. The scope within this market domain is narrow due to its highly specialised nature of products and services that are only required by a limited number of large organisations who consume a large amount of electrical energy.

Seltek's organisational planning process: The case of Seltek reveals that within the European energy management market a number of other firms are also operating alongside Seltek thus making the competition for market share precipitous. Seletek's entry into this sector is recent and reason for entry is twofold. Firstly, to avoid losing business to powerful competitors with their ever growing encroachment into Seltek's existing area of activity in the UK market. And secondly, the young MD's ambition to diversify his family business into manufacturing within the same sector. The 'discovery' of this external 'threat' and personal ambition left the MD with one single 'choice' of business collaboration with one of the competitors. Thus, the strategic 'choice' was 'implemented' through merger with the Belgium firm Energy ICT group.

Being a relatively new entrant to a precipitous industrial business sector, it became apparent to Seltek's management that, like any other firm, Seltek is not free from inherent organisational weaknesses. Before long Seltek found that its teething problems, unlike the other case firms, related significantly to its lack of experience in project management. A skill requirement that is a must for a firm in this line of business. In order to counter balance this internal weakness, Seltek's management adopted 'push' selling strategy backed up by its strong and competent sales and technical personnel.

Marketing strategy: The case analysis of Seltek reveals that, in contrast to the other case firms, its management has adopted an aggressive selling strategy to increase its market share. The analysis also reveals that, in the context of product and services marketing, a significant hiatus exists in its organisational activities in terms of lack of a marketing plan of some kind.

Although Seltek's present strategy of aggressive selling helps the firm to increase its market share in the UK energy management market space it could be argued that Seltek would benefit from a coherent market plan consistence with its competitive market, product, processes and selling strategy for its further development.

Whilst in contrast to its management's beliefs and views, Seltek may be able of developing an explicit marketing plan out of its two internal strengths which lay with its strong technical and sales teams. Through little alteration in its present strategic plan Seltek may be able to make its market presence more consistence and explicit.

Use of ICT/Internet: Selktek's strength and experience in using ICT and computers is not comparable to that of the other case firms. The case analysis reveals that Seltek has been using computers since the dawn of commercial availability of personal computers.

At present, the whole organisation is underpinned by computer equipment and well trained computer staff. Unlike the other case firms Seltek not only uses the computer to facilitate a great deal of the organisational aspects of its management, it also actively encourages (and even insists) the firm's personnel to upgrade their computing

skills on a regular basis in line with the upgrading of the firm's computing hardware and software equipment. In this regard Seltek is some considerable way ahead compared to the rest of the case firms.

In the context of ICT and the Internet, Seltek not only uses it for maintaining regular contact with its Belgium based head quarters but also uses the Internet for networking and exchange of vital technical information and software with its continental sister concerns and the head quarters staff.

Thus on the question of understanding effective use of ICT/Internet, Seltek has reached a level of competence significantly beyond that of other case firm's. For example, Hanwell sees use of the Internet by employees below the rank of managers as detrimental to the firm's productivity. While Seltek sees competency in ICT as an essential qualification for its staff for improving the firm's productivity.

Finally, although Seltek has become more adept than the other case firms in the use of the ICT/Internet/computer technology for business purposes, this application has evolved as an emergent process out of necessity to gain a foothold in a steeply competitive market through reducing costs and improving on product delivery times. For Seltek, las with the other case firms, there is void of evidence that this process is part of a pre-conceived strategic planning process for marketing its product/services to its customers.

11.1.2 CEMAC Limited

Of the four case study firms Cemac is the smallest in size and its operating environment is comparatively more precipitous than the other three. It is the perseverance, patience, resolve and technical expertise of Cemac's founder cum owner-manager that brought the firm to where it is now.

Cemac's organisational planning process: Cemac operates in the security public address (SPA) systems product area – a specialised but narrow market space. It has a number of home customers but unlike Hanwell, Seltek or Digitimer it does not have a foothold in overseas markets, nor does it intend to or have any plan to enter into an

overseas market. This reluctance of further expansion is perhaps due to the owner-manager's earlier traumatic personal experiences.

The home market for SPA systems is limited plus there are many competitors in this sector who are larger, resourceful and thus more powerful than Cemac. Within such an environmental setting Cemac's owner-manager's decision not to encroach into powerful competitors' areas of operation but to collaborate with them is a wise and visionary choice. Cemac therefore often operates as a sub-contractor for those influential competitors.

In line with this 'peaceful co-existence' strategy, Cemac also maintains close contact with its limited but loyal corporate customers and, at the same time keeps a close watch on changes in its 'task-' and 'supra-' environmental systems. Production processes through to day-to-day running of the firm is closely controlled by the owner-manager himself.

Like Hanwell, Cemac's owner-manager is quite aware of his firm's strengths and weaknesses inherent to the 'smallness' of his firm and strategically manoeuvres them in a manner so as to exploit the available external opportunities favourably and allay the environmental threats.

Marketing strategy: In the context of marketing strategy, like Hanwell or Seltek, Cemac does not follow a traditional pre-conceived long-term marketing policy. Instead, its marketing strategy is very flexible, short-term and entirely based on an 'as it comes' basis. Again, Cemac is well aware of its position within its 'open ended' environment. It is also aware of its abilities and inabilities, in a word its own limitations. The owner-manager is well aware of CEMAC's inability to change the market and the imminent danger associated with even an attempt at doing so (for example, the head-on clash with powerful competitors). Therefore, Cemac resorts to a strategy to 'co-exist' with its environmental agents. Unlike Seltek or Hanwell, Cemac therefore follows a marketing strategy to not grow further, even in overseas markets.

Use of ICT/Internet: As discussed above, after auditing its internal and external environmental situations Cemac's management is following a non-expansion strategy.

Like Digitimer, Cemac has a small pool of corporate and other customers with whom it intends to maintain a close-knit informal family like relationship.

Cemac's customer base is small, its production volume is small and its supplier base is even smaller. The owner-manager feels that within such a small community the need or requirement for computers and related technologies is insignificant. On the other hand, to the owner the Internet appears to be confusing with a farrago of data/information available on it. Though apprehensive himself, unlike Hanwell's owner-manager he neither prevents nor procrastinates its employees from experimenting with it.

The unfolding picture of Cemac's ICT/IT use is that the firm is at its nascent 'stage I' position where its Internet use is presently limited to only receiving/sending a few e-mails. In this context, Cemac is lagging behind the rest of the case firms. However, though slowly, Cemac has started experimenting with the Internet in order to learn potential applications in its environment, both internal and external.

11.1.3 Hanwell Instruments Ltd.

Compared to Digitimer and Seltek Hanwell Ltd. is a relatively new firm founded in 1986. However, although it is new and smaller in size, it already has spread its roots deep inside the market space it is operating in.

Hanwell's current product area of specialisation is data logger equipment. This is a range of instruments having varied applications which have a wider market spanning from home to abroad. Wider markets mean relatively low entry barriers attracting a number of competitors and resulting steep competition.

This is where Hanwell's innovativeness comes into play. Hanwell's target market sector is the top echelon - offering customised quality products at a competitive price- a classic example of creating competitive advantage through differentiation. Moreover, Hanwell is also keen to maintain its market share- so keen that it follows a flexible pricing policy where it adjusts and re-adjusts prices of its export merchandise in line with the ups and downs of the global financial markets.

Data loggers are Hanwell's 'current' prime product area, 'current' because the firm also had a 'previous' product. Hanwell started its journey with designing-manufacturing-offering radio-telemetry systems, but quickly shifted its direction to the data logger products.

Hanwell's organisational planning processes: The emerging holistic picture of Hanwell reveals that although it is a relatively new entrant it has established itself within its operating environment in a short span of time by means of its innovativeness, flexibility, vision and ability to diversify quickly. Inevitably, all the credit and praise for Hanwell's success are attributable to its management.

Hanwell is also aware of its 'smallness' related vulnerability which is reflected in its cautious approach to its outsourcing part of its production processes. Hanwell selectively outsource the manufacturing of components that require a sizable amount of capital investment such as metal fabrication and surface mount processes. This is not an 'economy of scale' but a method of economising the production costs.

Hanwell is also aware of its labile and competitive environment. Its relentless pursuit to meet changing market demands through new product development efforts or keeping track of new technological developments are proof of this. The management also accepted the fact that embracing changes in line with the ever changing environment is the name of the game for survival. The burning proof of this strategy is their accepting and exploiting modern production processes and information technology into its product lines, production processes and in administrative works such as SMD technology, use of computers in product design and test phases and office jobs respectively.

Marketins strategy: Seemingly Hanwell does not have a 'classic' pre-conceived planning process in place in determining its long- or short-term business strategies. What unfolds is that Hanwell follows a strategy that is emergent and evolves spontaneously with the unfolding situational demands. So does its marketing strategy.

Hanwell is well aware of its environment's instability. Thus, to cope with its environment Hanwell adapts a marketing strategy based on the view of an 'as it comes' technique. Hanwell is 'opportunistic' in that it seizes any opportunity that comes before it. Hanwell's operating environment is 'open ended', thus it follows a strategy of 'from here' not 'to somewhere'.

Use of ICT/ Internet: In its relentless search for customers and markets, continuous product development processes, procurement, distribution and search for information about competitor's product development, Hanwell uses the Internet in a similar way as the other case study firms. Its use of a 'static' portal for advertising its products on the Internet depicts its similarity to the other case firms in this regard. On the other hand, its dissatisfaction with extant Internet search engines puts it into the same category as Seltek in that both show paucity of requisite training in the subject.

Hanwell operates in a seemingly unstable environment as does Seltek and Cemac. All of them are conscious and cautious about their positions within their respective environments. But perhaps Hanwell is too cautious in this respect. The sensitivity is revealed in its imposition of restrictions on its employees in using the Internet. In this respect Hanwell is poles apart from the other case firms. Not only does this restriction severely hinder Hanwell's opportunity to learn from the environment through its employees, it also de-motivates the staff to learn. For firms in Hanwell's position and situation, learning through communication with external environmental agents is a must for continuing their functionality as a viable business organisation.

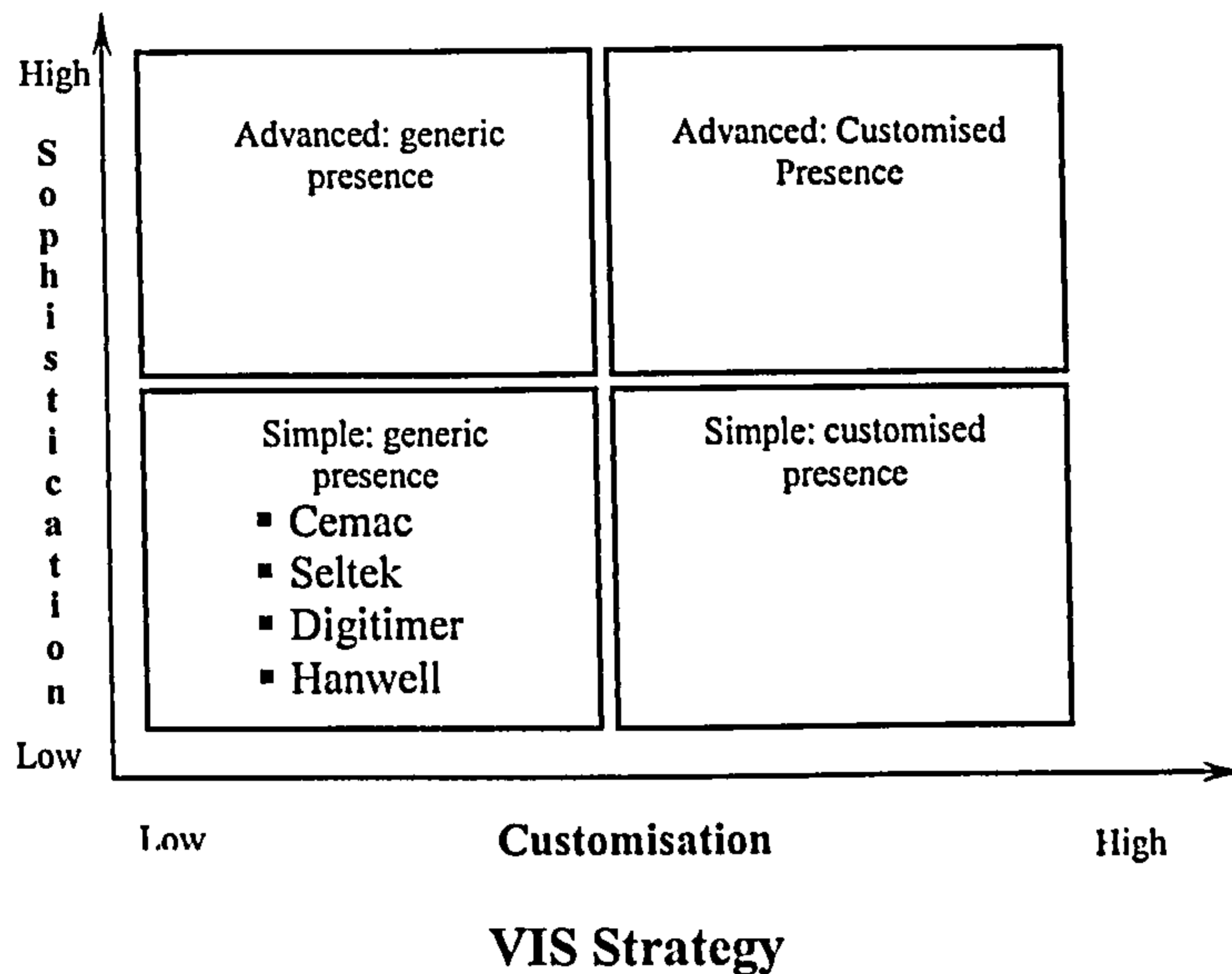
11.2.0 Analysis of the Strategic Business Use of the Internet by Case Study

Firms:

In this section a consolidated analysis of the use of the Internet by the case study firms for strategic business purposes is carried out. The framework for the analysis is based upon Angehrn's ICDT model, as discussed in chapter 6.

11.2.1 VIS Strategy:

Seemingly all four case study firms established their presence in the virtual information space. They utilise the Internet as a cheaper alternative to a telephone and a fax machine and an advertising media although this latter application is of a 'static' nature. These seminal strategic uses of the Internet position them in the simple generic quadrant of the VIS which represents a low level of sophistication and customisation in that space.



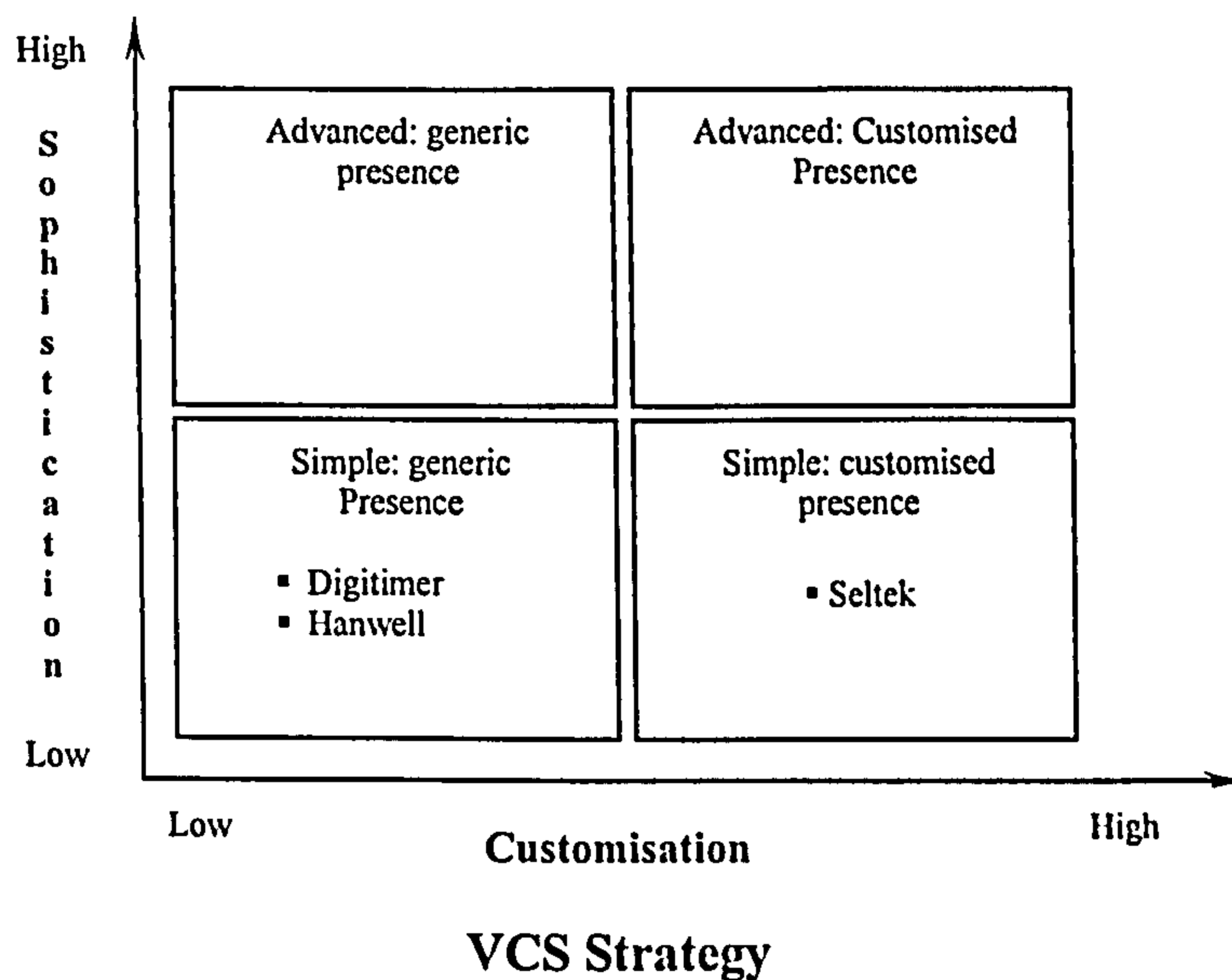
However, all four case firms paste the detailed information about their products and services and their access details on their respective W3 portals. But none of them demonstrate a customised presence in this space. Drawing on Angehrn (ibid) the VIS strategy of the case firms can be defined as 'simple' and 'generic' and their VIS presence is represented on the 'Sophistication-Customisation' diagram above.

11.2.2 VCS Strategy:

Virtual Communication Space or VCS is '*the extension of traditional spaces in which economic agents meet to exchange ideas and experiences, influence opinions, negotiate potential collaborations, lobby, engage in relationships and create different types of communities*', (Angehrn, 1997:363).

In this respect three case firms (Seltek, Digitimer and Hanwell) show some degree of presence in the VCS space through their utilisation of the Internet to collaborate and communicate with their respective business partners (sub-contractors and suppliers). However, the activities of these three firms in this space remain 'simple' in terms of sophistication, although one of them (Seltek) achieved some high level of customisation through its utilisation of the Internet for regular exchange of information views with its overseas group members.

The analysis indicates that a more mature VCS strategy in terms of sophistication and customisation is yet to emerge from many small firms, even from the high-tech. sector. It appears that small firms have to learn a great deal about networking with

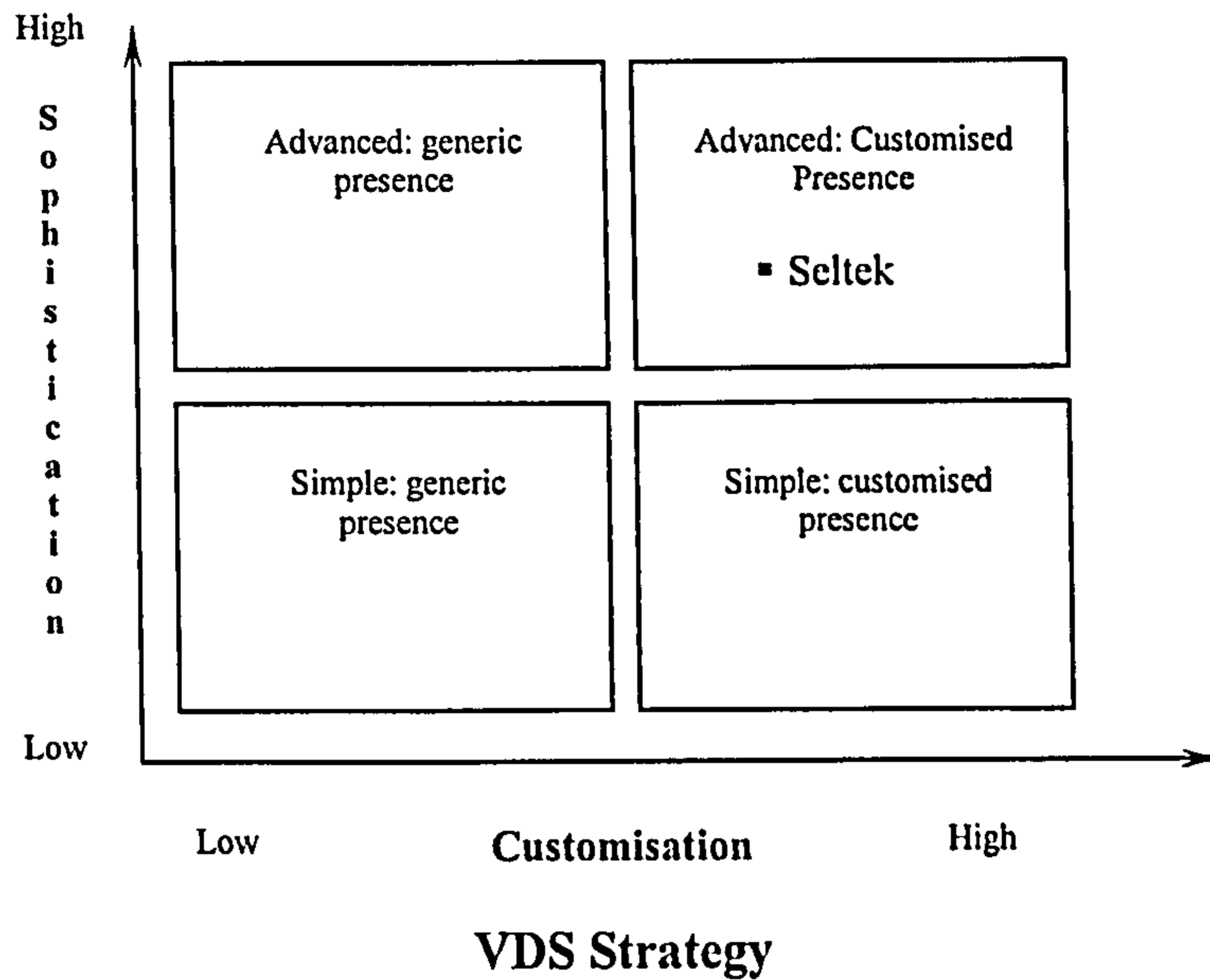


their respective business partners so as to understand and capture the trends of their environment. The analysis further unfolds small firms' dearth of understanding of, and training in, one of the potentials of the Internet. The VCS positional view of the case firms is shown on the above VCS diagram on the previous page.

11.2.3 VDS Strategy:

The virtual distribution space (VDS) denotes the degree of utilisation of the Internet to distribute electronically products/services wholly or in part.

In this regard, it is quite comprehensible that, since most of the case firms' products are physical, their presence in this space is limited.



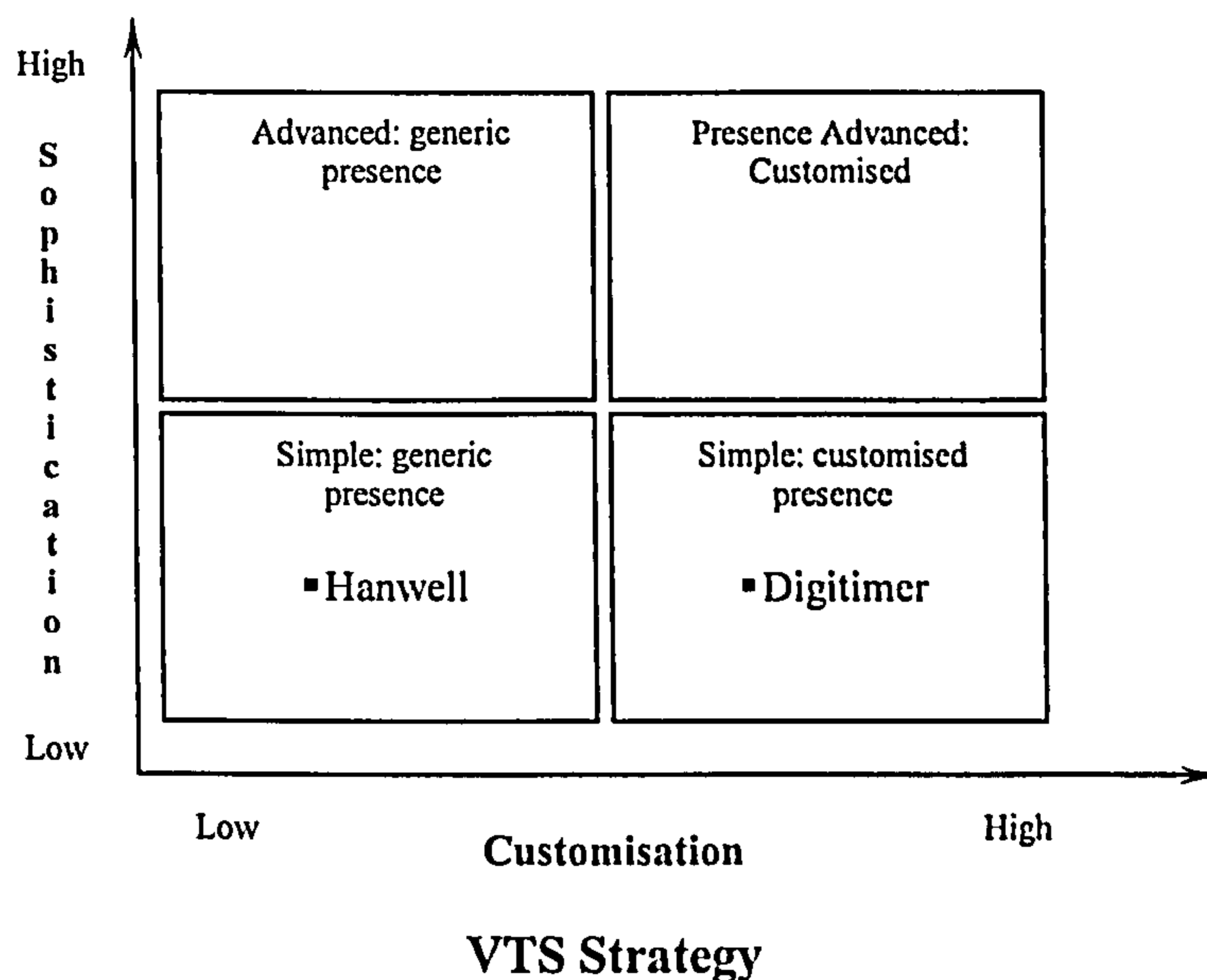
However, apart from physical products (power monitoring devices), one case firm (Seltek) also deals with customers' data processing on electrical power consumption following remote capturing of them. In this context, Seltek uses the Internet extensively. On the Internet the firm also frequently down loads various software packages from its Belgium headquarters site. Those activities demonstrate Seltek's attainment to an advanced stage in both sophistication and customisation levels. On the other hand, the remaining case firms do not show any significant activities in this VCS space. The positional view of the case firms is shown on the VDS diagram above.

11.2.4 VTS Strategy:

The virtual transaction space (VTS) can be defined as '*..new Internet-based channels through which economic agents can exchange formal business transactions such as orders, invoices and payments.*' (Angehrn, 1997:363).

The descriptive and fractured analyses show the apprehension of all case firms on security grounds with regard to using the Internet for financial transaction for business deals. However, Hanwell adopts a simple and customised use of this space through

the payment of employees' salary to their bank account by means of transfer of funds electronically on-line.



Alongside Hanwell, another case firm (Digitimer) has shown its presence in the VTS space through its exchange of orders and invoices on-line on the Internet. Digitimer also shows further activity in this space through its answering of customer's queries on the Internet. The remaining case firms show no significant presence in this space. Hanwell and Seltek's VTS presence are shown on the VTS diagram above.

11.3 Matrix Analysis: Providing a Comparative contextual Picture of the Participant Case Study Firms' ICT Usage/Non-Usage

The utilisation of matrix analysis allows for the build up of a summary composite picture of ICT usage and non-usage within the holistic organisational context of the three participant case study small businesses.

Effectively, the 'fractured' organisational activities and Internet/ICT applications, which the 'fractured analysis' component of the research inducted out of the full contextual descriptive analysis of the case study small firms, lends itself for plotting and presentation within a matrix format. The resultant 'contextual' matrix presentation allows for focus upon key strategic attributes as well as structure and cultural sub-contexts.

Whilst the matrix analysis facilitates an 'at a glance' identification of areas of commonality and difference in ICT usage as highlighted in the descriptive and fractured analyses components of the study in the respective case firms, its major value is in the making explicit of 'common denominator' processual issues which are likely to temper the efficacy of the Internet and wider ICT usage within a small business development context in the future. These processual issues centre around the small firm strategic learning process:

- a) Sustainable strategic development of the small business over time requires double loop learning.
- b) This in turn requires the owner-manager picking up on external information signals and contextualising that information in the specific small firm context.
- c) The nature and form of external change situations are such that an all embracing comprehensive external analysis of that change is beyond the small business capability.
- d) Small businesses thus need to establish operating conditions which facilitate learning about 'slices' of their external environment and acting thereon.

The matrix analysis demonstrates the commonality, differential and usability with regard to how Hanwell Instruments, Seltek and Digitimer are utilising ICT for control, communication and information retrieval purposes.

Integral to this is indication of utilisation of the various areas of ICT/the Internet as learning activities facilitators. But also integral to this is little evidence of understanding of the owner-manager need to constantly challenge his/her existing 'world views' (mindset) if creative and innovative strategic organisational adjustment is to result as a response to unfolding unpredictable external change situations. Whilst some evidence exists as to the benefits of ICT-based learning interfaces between the case firms and external actors on the boundaries of the firms' activities (suppliers, distributors, customers etc.), it can be argued that a lack of owner-manager

understanding of the role of deep, dialogical learning interfaces as a source of the actual double-loop learning process is a common denominator constraint on the strategic learning and development of each of the case study firms.

In the absence, of the opportunity for deep face-to-face dialogical learning interactions when using ICT, the above insight draws attention to the value to small business support providers of nurturing owner-manager understanding of the small firm's strategic learning process and of the high level benefits of building interactive on-line 'dialogical' owner-manager learning capabilities.

For each of the three case study firms, the following developmental actions seem appropriate:

- a) Recognise and accept the unpredictable and unknowable nature of their internal environments.
- b) Maximise utilisation of ICT/the Internet in effecting tight short interval internal control.
- c) Utilise the 'slack' provided by the tight control to establish further conditions to facilitate identifying and learning about the unknowable unfolding external change situations.
- d) Understand the small business strategic learning process in terms of the nature of, and need for, double-loop learning.
- e) Maximise ICT/internet usage to facilitate double-loop learning (for example, the build up of deep 'learning interface' with customers, suppliers, competitors, etc. and the perfecting of 'interactive' 'conversational' 'on-line dialogical' learning actions as input to the double-loop learning process). Maximisation of ICT usage would require the encouragement of ICT-based learning amongst all key small business staff.

HANWELL INSTRUMENT 2D INTERACTION MATRIX, FIG 1

Organisational Applications	STRATEGIC ATTRIBUTES				STRUCTURE & CULTURE
	Marketing/Sales	Human Resources	Distribution & Procurement	Production Processes, R&D, Technology & Operations	
Communication	A communication media Parallel to traditional Telephone and fax	Fast and easy Communication media	Fast and cheaper Communication vehicle To communicate with distributors	No use	Used as a faster/cheaper communication media parallel to telephone & fax
FINANCIAL TRANSACTION	Not used for financial transactions on sales	Payment Of Wages and salaries.	Yet to be used for transmission of order, invoices etc.		Never used for financial purposes
PRODUCTIVITY	Media to response Customer's product queries	Restricted use By employees	Direct contact with customers leading to shorter value chain, faster delivery and lower product/services cost	No use	Cautious to step out from traditional management towards information based control and Culture change
PRODUCT/ SERVICE PROMOTION	An alternative Advertising media for Company's Products & services	No use	Distribution of promotional material, product/services information, prices etc.	Used for searching Supplier's Web-catalogues	Virtual W3 based promotional material in parallel with magazines leaflets based promotional activities.
CUSTOMER/ SUPPLIER INTERFACE	Partial use(20%) In parallel with telephone & fax	Search media To Consult Supplier's catalogue	Only to distribute Technical information	No use	Focused to monitor competitor's product development
INTERACTIVITY	No use	Exchange of e-mails With Environmental agents	Faster and cheaper communication Liks with overseas distributors	No use	Not used to establish close relationship through interactive Dialogue process
ENVIRONMENTAL CHANGE MONITORING VEHICLE	Information gathering vehicle about competitor's products	Not used to gather external Environmental information except about competitor's products	No use	No use	Not used for environmental scanning process To be better informed about operating environment
BUSINESS INTELLIGENCE	Faster information on changes in competitor's products, processes and new entrants	Updated information about competitors, new products leading to faster response	No use	No use	Not used to create an information oriented organisational structure and culture
LEARNING TOOL	Yet to learn to use as a tool for new ways for marketing and sales	Yet to learn to understand as an useful tool to monitor customer's habits and tastes	Yet to learn an useful tool For product distribution based on constant exchange of information	Yet to learn o adjust processes based on information from sub-contractors, customers and other environmental agents	Yet to learn about learning

Control Instrument Information Retrieval

Organisational Activities Applications		STRATEGIC ATTRIBUTES				STRUCTURE & CULTURE
		Marketing/Sales	Human Resources	Distribution & Procurement	Production Processes, R&D, Technology & Operations	
Communication		a sparingly used communication media Parallel to traditional Telephone and fax	Fast and easy Communication media Personal use at present	No use	No use	Used as a faster/cheaper communication media parallel to telephone & fax Occasional use
	FINANCIAL TRANSACTION	Not used for financial transactions on sales	No use.	Yet to be used for transmission of order, invoices etc.		Never used for financial purposes
	PRODUCTIVITY	Media to respond Customer's product Queries, Sparingly used	No use	Yet to use TO make direct contact with customers leading to shorter value chain, faster delivery and lower product/services cost	No use	Cautious to step out from traditional management towards information based control and Culture change
	PRODUCT/SERVICE PROMOTION	An alternative Advertising media for Company's Products & services	No use	Using for distribution of promotional material, product/services information, prices etc.	Yet to use for searching Suppliers' Web-catalogues	Virtual W3 based promotional material in parallel with magazines leaflets based promotional activities.
	CUSTOMER/SUPPLIER INTERFACE	No Use	No use	Yet to use to distribute Technical information	No use	Focused to monitor competitor's product development
	INTERACTIVITY	No use	No use	No use	No use	Not used to establish close relationship through interactive Dialogue process
	ENVIRONMENTAL CHANGE MONITORING VEHICLE	Information gathering vehicle about competitor's products Occasional use.	Not used to gather external Environmental information except about competitor's products	No use	No use	Not used for environmental scanning process To be better informed about operating environment
	BUSINESS INTELLIGENCE	Faster information on changes in competitor's products, processes .	Updated information about competitors, new products leading to faster response	No use	No use	Not used to create an information oriented organisational structure and culture
	LEARNING TOOL	Yet to learn to use as a tool for new ways for marketing and sales	Yet to learn to understand as an useful tool to monitor customer's habits and tastes	Yet to learn is an useful tool For product distribution based on constant exchange of information	Yet to learn to adjust processes based on information from sub-contractors, customers and other environmental agents	Yet to learn about learning
			Control Instrument			
		Information Retrieval				

SEMI-STRUCTURED INSTRUMENTS 2D INTERACTION MATRIX, FIG. 1

Organisational Activities Applications	STRATEGIC ATTRIBUTES				STRUCTURE & CULTURE
	Marketing/Sales	Human Resources	Distribution & Procurement	Production Processes, R&D, Technology & Operations	
Information Systems Communication FINANCIAL TRANSACTION PRODUCTIVITY PRODUCT/SERVICE PROMOTION CUSTOMER/SUPPLIER INTERFACE INTERACTIVITY ENVIRONMENTAL CHANGE MONITORING VEHICLE BUSINESS INTELLIGENCE LEARNING TOOL	Increasingly used as a communication media Parallel to traditional Telephone and fax	Fast and easy Communication media	Fast and cheaper Communication vehicle To communicate with Vendors & group members	Exchange of technical information on system components prior to production	Used as a faster/cheaper communication media parallel to telephone & fax
	Not used for financial transactions on sales	No use	Yet to be used for Transmission of order, invoices etc.		Never used for financial transactions
	Not used	Copious use By the employees	Direct contact with customers in order to transfer Data Retrieved from their systems	No use	Yet to step out from traditional management towards information based control and Culture change
	An alternative Advertising media for Company's Products & services	No use	Display of product/services the firm offer through the W3 portal	No use	Virtual W3 based promotional material in parallel with magazines leaflets based promotional activities.
	Copious use in parallel with telephone & fax to exchange information with vendors & other group members	A media to transfer data collected from customer's systems to customer's computers	Transfer of customer's retrieved data and exchange of technical information with other group members	Competent in remote data retrieving and delivering processed information to customers on-line using the Internet	Focused to monitor competitor's product development
	No use	Exchange of e-mails With HQ and group members	Faster and cheaper way for exchanging technical information with group members	No use	Not used to establish close relationship through interactive Dialogue process
	Information gathering vehicle about competitor's products	Being used to gather external Environmental information including competitor's products	No use	No use	Being used for environmental scanning process To be better informed about operating environment
	Faster information on changes in competitor's products, processes and new entrants	Updated information about competitors, new products leading to faster response	No use	No use	Yet to be used to create an information oriented organisational structure and culture
	Yet to learn to use as a tool for new ways for marketing and sales	Yet to learn to understand as an useful tool to monitor customer's habits and tastes	Yet to learn an useful tool For product distribution based on constant exchange of information	Yet to learn to adjust processes based on information from sub-contractors, customers and other environmental agents	Yet to learn about learning

Chapter Twelve

Conclusions:

*Summary and Implications of
Research Findings: Limitations of
the Study and Implications for
Small Business Support
Providers*

CHAPTER TWELVE

CONCLUSIONS: SUMMARY AND IMPLICATIONS OF RESEARCH FINDINGS: LIMITATIONS OF THE STUDY AND IMPLICATIONS FOR SMALL BUSINESS SUPPORT PROVIDERS

12.0 Summary of Chapters:

Chapter 1 provided the research context and allowed for articulation of the objectives of the research as follows:

- Enhance understanding, of the nature and form of strategy development and management activities and processes within small-medium size businesses? (in terms of unfolding of markets, products and process activities)
- Examine to what extent and in what ways SMEs draw upon information technology and the Internet technology to input into the strategy development activities and processes?
- Determine what are the key facilitators (enablers) with regard to the uptake of the Internet related management vehicles within specific small firms and their operating conditions?
- Determine what are the key restraining forces restricting the uptake of such management vehicles in those small firms?
- Enhance understanding of how small businesses transform externally derived insight and information into organisational learning in terms of foundations for adjustment to markets, products and/or process activities?

The nature and form of the research objectives in turn highlighted the need for a contextual, processual case study approach to the investigation.

Chapter 2 addresses the development of the research methodology and method to be utilised within this study. It considers the issue of underpinning philosophical foundations of the research in terms of compatible epistemological/ontological foundations. The role of the base epistemological bootstrapping process is elaborated and the mainstream empirical research approach is developed.

Chapter 3 commences the base 'bootstrapping' research process through critical analysis of the small business, strategy development and ICT literatures.

Chapter 4 'bootstraps' the ISH/Internet technology literature.

Chapter 5 makes explicit the partial frames of guiding insight derived from the literature.

Chapter 6 presents the 'world of small business management practice' component of the 'bootstrapping' process, and uses this as context for developing the conceptual research framework and presenting the analytical approaches and sub-processes underpinning the mainstream empirical component of the research.

Chapters 7, 8, 9 and 10 presents four in-depth case studies in the form of descriptive analysis which teases out the developmental context of a small high tech firm and its uptake/non uptake of ICT. The analysis utilises an initial full holistic contextual analysis component, a fractured-in-context analysis component focussing in depth on discrete development areas of enabling/ constraining context impacting the firm's ICT utilisation and a re-contextualising component which pulls back the fractured insight into the 'big development' picture.

Chapter 11 presented an in-depth comparative analysis of the four case study firms drawing upon Angehrn's ICDT virtual space model and offering a matrix-based overview of the contextual usage of ICT/Internet for each firm.

Chapter 12 (this chapter) offers conclusions in the form of summary implications of research findings, limitations of the study and a message for small business support providers.

12.1.0 Summary of Findings within the Context of the Research Questions:

This study concludes by readdressing the research in the context of the research questions:

12.1.1 Q 1: What is the nature and form of SME management activities, practices and processes which have strategic implications and strategic outcomes?

In chapters 3 and 4, the 'bootstrapping' component of this research, it was suggested that contemporary small businesses may be attempting to survive and develop in an external environment which demonstrates a level of unpredictability that is incompatible with long-term planning that relies upon a rational and structured management type of approach. In theory, it would appear that a small business can improve its prospects of survival into the long-term by following a sequential step-approach whereby it periodically: a) conducts an external analysis or external audit of its external environment in a manner that will reveal understanding of development opportunities and of any threats that may restrict or impact existing and future progress; (b) focuses upon its internal strengths and weaknesses to inform the potential for seizing the externally identified opportunities and combat the revealed threats; (c) firms up on the development picture through the conducting of a SWOT analysis; (d) formulates long-term objectives; (e) identifies development strategies that effectively provide a predetermined development path(s); (f) designs programmes to underpin implementation of the development strategies; (g) implementation and (h) undertakes periodic control and review activities to ensure the business remains on its development path.

Certainly, in theory, it could be argued that the SMEs in this study could carve out a more certain picture through an increased formalisation of their management processes, informed by the step-activities integral to such a long-term rational planning model. The examination of the participant SMEs within the study, however, point to sound reasons which severely reduce the viability of such rational long-term planning modes of management:

- (a) The nature and form of the external operating environment is such that the conducting of a comprehensive external analysis whilst maintaining effective operational management of the core activities of the business is out of the reach of the small business management. Even accepting a relative continuity of impacting economic forces such as interest rates, exchange rates, inflation and government economic policy to control those forces, creative competition actions (including the nature and pace of technological developments) and totally unknowable and unpredictable national and world events such as foot and mouth disease and the September 11 disaster see the conducting of a comprehensive external audit and analysis as non-feasible.
- (b) The very nature of the rational planning model requires the small business to analyse past and present developmental processes and events and to rely upon the resultant understanding as adequate foundations from which to identify predetermined development paths into an unpredictable future.

Arguably, one of the small businesses in this study (Digitimer Ltd.) is operating in a relatively closed environment. The owner-manager feels comfortable progressing in a market epitomised by high entry barriers and close customer-supplier relationships. Thus, arguably, this business could benefit from an increased formalisation of its strategy development process by moving toward the rational planning mode of management. It has also been argued within the analysis of this case business, however, that an owner-manager mindset of predictable future may be a nurturer of complacent organisational behaviour and the underpinning of a predominant single-loop learning process, rather than a more complex double-loop form of learning which is essential to effective long-term strategic development. The uptake of a more formal rational long-term planning form of management would in fact in practice perpetuate a single-loop learning orientation in its encouragement of logical reasoning and the use of current existing mindset and 'world view' as frame of reference for conducting the step rational planning process. A key issue here, however, is the extent to which the owner-manager's current interpretation of a relatively stable cosy-cosy external operating environment holds as valid: even the relatively stable market in which it operates is susceptible to unknowable, unpredictable change process.

The tentative conclusions to be drawn from the build up of insight obtained from the study of the participant small firms in this research centre upon the likelihood that successful small businesses focus predominantly upon the 'now' of their existing markets, products and processes activities and consider changes in their external environment in terms of its implications for those existing activities. Thus, unexpected change may occur and the small business management unfolds understanding of that change through learning activities (interface and interaction with key individuals such as suppliers, customers and even competitors and close study of informing documentation such as trade journals) and determining the significance of the change for its existing core activities. The management of future long-term direction would not, therefore, be guided by some pre-determined development paths revealed by a rational long-term planning process, but rather be conceptualised by the owner-management in terms of 'the direction we should be pointing in given current levels of capability and understanding of that capability, and given current levels of understanding of the external operating environment'.

Given those tentative conclusions, future research into the nature and form of strategy development and management activities and processes within small businesses is likely to benefit from two diverse paradigms as frames of reference: Firstly, a long-term rational planning model integral to which is rational, strategic, sequential activities of strategic analysis, strategic choice and strategic implementation. Future in-depth empirical evidence will either demonstrate the application and utility of such model processes or begin to reveal just how strategic analysis, choice and implementation does occur in the small firms. And secondly, an organisational learning mode of small firm strategic development, the tentative evidence of which is revealed in this study, with a small business learning about development opportunity and from a focus upon the 'now' of existing markets, products and processes activities as the frame of reference for dealing with both the knowable and unknowable unfolding elements of the external operating environment. It seems within this study that small firm strategy development within successful firms is likely to be a predominantly emergent process, but having emerged new development opportunities and gained confidence in this future potential, a pre-determined element of intended future development path may follow- but given the nature of the contemporary external operating environment, it is unlikely that small businesses can rely upon a

rational long-term planning mode of strategic management to unfold that predetermined path up front.

The 'final perspectives' of what this study reveals in terms of the question of what constitutes smaller business strategic management activities relates to how it seems to be 'day-to-day' organisation and management activities that go on to make up what might be called 'strategic management'. This sits alongside the recent work of Johnson et. al (2003) who suggests that strategy *process* research only begins to enter the 'black box' of organisations, and falls short of providing understanding of the day-to-day management activities that make up the processes. For example, the day-to-day interfaces of the owner manager with key information holders. The close builds up of learning relationship with a particular customer. The use of trial and error experiment in bringing about change to production practices. All this leads one to conclude that understanding of small business strategic management and strategy development processes will derive from further examination of day-to-day activities within the routines of the business which (often sub-consciously) unfold into further actions and learning processes which ultimately manifest themselves in the form of key strategic outcome for the business. This interpretation of 'strategic management' in the small firm context, in turn, suggests a limited potential for the use of formal strategy development models that position strategic management at some removed and 'higher level' of management activity – rather than as a natural subsumed on embedded part of the day-to-day.

12.1.2 Q2: What levels of management and workforce utilise the ICT/Internet technology and in what ways do they participate in strategy development processes and activities having strategic outcomes?

The empirical part of this study unfolds various themes about the extent of the use of the ICT/Internet by the case study firms.

The study reveals that all but one (Digitimer Ltd.) of the case firms operate within relatively more unpredictable unstable environments. These firms resort to differentiation on product quality (Hanwell Ltd.), aggressive selling (Seltek Ltd.) or trust and customer loyalty (Cemec Ltd.) as strategic means to continue their

businesses. Whereas Digitimer Ltd. operates within a comparatively 'closed' environment created by a high level entry barrier and a 'close community type' of business partners.

The study further divulges that the state of the environment has very little effect on the utilisation of the Internet or empowerment of employees to expressing their views in the running of the firm. On the contrary, it is the owner-managers' views of operating environments that dictate the strategic directions of these firms. The operating environments act as stimuli to the strategy development processes.

Evident from the study is how owner/senior managers dictate(s)/control(s) the running of these firms. Of the four case firms, Digitimer shows some form of lax and informal management-employee relationship where during coffee breaks some informal exchange of views takes place each morning. At the opposite end is Hanwell Ltd. where the management is in firm control of the running of the firm and business activities.

Thus, the holistic picture of strategy development processes of these firms as emerging from the empirical study is that on the question of strategic direction of these firms and decision making processes, remain firmly under the control of the respective owner-manager. And some limited anchoring-in of the views, opinions and learning abilities of employees to the decision making is evident.

In this context this research supports earlier studies that most small firms are the creation of their founder owner-managers. Many owner managers fervently keep, control of their 'creations.' And, these firms are also the main source of livelihood of their owners and their families. That such owner managers therefore keep the control of their firms predominantly to themselves as sources of livelihood is also precariously linked to the 'open-ended' operating environment of these firms. For the owner-manager this complex culmination of source of earning and its unforeseeable unpredictable operating environment build a mental construct which is often underpinned by anxiety and stress. The reality of little room for manoeuvrability due to meagre resource base makes the situation much tenser in that a small mistake may result in complete wipe out of the owner-manager's fragile source of livelihood.

Therefore, on the question of employee participation in a small firm's strategy formulation/development activities the emerging picture is that these processes are largely confined to the owner-manager him/herself.

On the other hand, in the context of ICT/the internet most of the case firms have empowered (except Hanwell) their employees to experiment with the technology. This act may see the filtering down of some organisational strategic decision making activities through sharing with lower level staff of the organisation. However, the insight derived from delving deep into the topic tells a different story. For owner-managers these empowerments are strategic steps resulting out of their inability to take up the application side of the technology on their own. Owner-managers' own shortcomings to mastering the technology as a "*source of farrago of information*" results in their inability to filter out firm-specific information. Thus, the owner-managers leave the task of experimentation, with the technology to junior but technically skilled (Cemac, Seltek, Digitimer) staff members. Wherever possible however even those experimentations are also frequently controlled by the management, as evidenced from Hanwell Instruments Ltd.

In summary, the study found little evidence of employee participation below senior management level in strategy development activities in any sensitive organisational decision making activities. The main emerging theme in this context is that in extreme cases the strategic option as seen by the owner-managers is to empower their staff to manage non-sensitive technical parts of organisational activity/process while keeping the control of such activities within their grip. Importantly, however, there is a key linkage here back into the conclusions drawn in response to question one above. Those arrears of activities in which the employees do participate in, or contribute to, strategy development activities, are also embedded in their actual day-to-day activities. For instance, the take over in the 'day-to-day' in area of activity the owner-manager is alone struggling to cope with.

12.1.3 Q3: To what extent and in what ways do SMEs utilise ICT/Internet technology to input into their strategy development activities in terms of their market, product and process activities contributing to such strategic outcomes?

This study, reveals significant areas of relevance of small business management learning and non-learning (or lower-level learning) activities and processes as integral components of the ongoing strategic development and survival of the participant SMEs. And it is this 'learning orientation' that provides informative context for the offering of conclusions with regard to the nature and form of SME utilisation of information technology, and the Internet in particular, within their strategy development activities and processes.

The ICDT and fractured in-context analyses unfold that the SMEs within this study have, to varying degrees and levels, learned about and applied ICT as an *information retrieval vehicle* which, for example, has allowed for the identification and monitoring of external environmental change. The more astute business keeps a close eye upon competitor's product development activities through examination and analysis of competitor's web-sites. The organisational form and activities of some of the SMEs has seen use of the Internet as a *method of close contact and interface with, and control of, their suppliers and/or distributors*. The use of the Internet has also been extended by one of the firms as a *direct distribution channel* for their products/services, where because of the nature of the product (data for its customers) the internet is exploited as a 'channel for commerce'. Yet another participant small firm has an organisational structure whereby the Internet is utilised as an *instrument for communication with group members* and thus as a facilitator of two-way internal control. In their use of the Internet as an *Information Board*, some of the participant small firms are, with varying degrees of success, erecting a non-traditional advertising media to continue communication with existing customers and to attract new ones.

Certainly, consideration of the differences in nature, form and level of utilisation of ICT by the different participant firms could provide a 'base of understanding' from which each of the firms could learn. However, perhaps the soundest conclusions to derive from this research study relate to potential 'linkages' between key identified phenomenon: (i) the unpredictable and unknowable nature of the contemporary

external operating environment; (ii) the inadequacy of rational formal long-term planning processes in dealing with that environment; (iii) the likely pre-requisites for some form of small business organisational learning in coping with impacting change and unfolding opportunity; (iv) the complexity of small business management learning (given the nature of the environment, relative resources poverty, the facing of potential unique problem-types and limitation of management abilities): and (v) an owner-manager need to have 'learned-how-to-learn' (i.e. the need for double-loop learning).

This 'learning context' insight has strong informing power with regard to conclusions to be drawn about the role and uptake of ICT within smaller businesses. The early work of Stacey (1990, 1993) gives emphasis to the predominance of open-ended change situations in the unknowable operating environment: these are totally unknowable and unpredictable in terms of timing and consequence. The challenge for the small business is thus to establish conditions which allow it to identify and cope with unfolding open-ended change situations. For Stacey (ibid), this represents complex learning, that is to say, double-loop learning, not simple, single-loop learning.

The context of this complex learning for small business is one of a kind of aggravation and intensity of complexity vis-à-vis large companies. Potential resource poverty, a compounding by the facing of potential unique problem-type and a limited management ability base fire that complexity.

The message regarding small business uptake and maximisation of ICT and for those involved in advising small firms in this respect is clear: enhance understanding of the small business strategic management and learning tasks. The owner-managers themselves need to learn-how-to-learn (effectively to double loop learn) – some have, many have not- support providers need to be more empathetic to the nature and form of the small business strategic learning process and of the inhibitors and constrainers within this process.

For Stacey (1991) establishing conditions to strategically learn about and act upon open-ended change would require a tight infrastructure of short interval control which

would facilitate the increased potential for creating some 'slack' for dealing with open-ended change situations. Here, whilst dismissing the potential for drawing upon rational long-term planning modes of management, short interval planning and tight organisation have a major role to play – integral to this is the opportunity for the formal application of ICT of a nature unfolded as best practice in some of the participant small businesses in this study: the facilitating of accounting activities, stock control recording of customer details, invoicing and so on. It is, however, the more strategic development context and the actual interaction with open-ended change situations where the issue of owner-manager learning process comes into play. Owner-managers, if they are to strategically learn, need to be able to anchor-in to Internet generated information and contextualise that information into the small business specific development context. This requires acceptance that we as individuals do not respond to the external stimuli of the actual information or insight initially received – we react to our interpretation of that stimuli. Thus, the small business strategic management learning process, if initially received information is to lead to strategic change, will require the owner-manager to surface and question the assumptions underpinning his initial mindset (or world view) and effectively 'try-on-for-size' the insight embedded in the new information or insight received.

A corollary of this is that Internet based management actions may have significant strategic learning informing inputs-or they may have limited impact. For example, information pulled off the Internet may have limited utility because of tacitly-held insight not portrayed by the sender. In face-to-face situations, dialogical learning activity by an owner-manager can allow him to tease out full understanding from the 'sender' and thus help him or her to double-loop learn about strategic significance for the firm.

One must conclude that if the Internet and ICT in general is to maximise its impact on small business strategy development processes, in the form, for example, of facilitator of change monitoring, environmental scanning, technology tracking, internal communication and control vehicle, then enhancement of understanding of the small business strategic learning process for the owner-manager, and on behalf of those attempting to advance small business uptake of ICT in a strategy development sense, must be a priority.

12.1.4 Q 4: What are the key facilitators within the external and internal SME development contexts with regard to the uptake of the cross-section of internet related management vehicle?

This empirical study reveals that, although at face value all the participant electronics firms appear to be more or less similar so far as their organisational processes and technological orientation are concerned, they differ to a great extent in their markets and products. While most of their organisational behaviour and part of their management style are dependant on the environment of the market interstice they are operating in (for example, the management style of Digitimer Ltd. is more relaxed or even lax than that of other participant firms such as Seltek or Cemac), the reason is that Digitimer operates within a seemingly 'closed environment' which is perceived as relatively stable by Digitimer's owner-manager. Whilst the view of Cemac's owner-manager about its operating environment is quite the opposite. On the other hand, the owner manager of Seltek intends to expand into the manufacturing sector and his perception of the external operating environment resembles a 'battle field' where he wants to win the 'war for expansion' with a team of trained sales persons. Drawing on Schutz (1973), Lee (1991:347) argues “.. *the same physical artefact, the same institution, or the same human action, can have different meanings for different human subjects, as well as for the observing social scientist. The observing social scientist must, among other things, interpret this empirical reality in terms of what it means to the observed people. In accepting this intersubjectively created meanings as an integral part of the subject matter that he or she is studying, the social scientist must collect facts and data describing not only the purely objective, publicly observable aspects of human behaviour, but also the subjective meaning this behaviour has for the human subjects themselves*”.

These owner-managers view their external operating environments from their own individual perspectives which in turn evolve out of their 'way of seeing the world'. These mental models have grown out of their respective social and family backgrounds, their past experiences and the situation they are in at present. It is this mind-set of the owner(s)/senior manager(s) that predominantly qualifies the way ICT/internet technology is integrated within each organisation.

For example, in the case-study participant firms all the owner-managers are technically well qualified. Secondly, they all possess, to some degree, interest in high technology in that all of them, except Digitimer's owner manager, started their electronic businesses on their own volition and, consequently have become successful. It is therefore reasonable to conclude that they all have a penchant for high technology. There is no doubt, that this mental inclination along with their academic training and professional achievement have subsequently played a major role in the shaping up their mental models which in turn provide the spectacles through which they view and judge the external world from a predominant technological perspective.

The burning example of such unique mental orientation is the uptake of the Internet by the participant firms. All of them connected to the W3/Internet as soon as it was available. This 'getting connected' to the web was not in the form of a vision of exploiting it as a 'business tool' potential but rather as an emerging technology in some novel technological gadget form with a prospect of utilising it as a cheaper communication/advertising tool. This latter analysis is supported by the mode of utilisation of the Net by these firms. They still view this technology as a cheaper and faster communication media and/or as a cheaper alternative to traditional media advertisement, not as a key facilitator of sustained strategic development.

A key factor facilitating the advanced use of the Internet, as revealed in the ICDT analysis, is the product/service range a firm deals with. When a firm's product is data/information or at least of rich information content it quickly orientates its business processes and organisational activities in a manner so as to utilise the Internet for advanced commercial purposes and its strategic marketing activities transcend beyond traditional methods and processes. On the other hand, when a firm's products are mainly physical merchandise then its Internet usage, in the main, is confined to 'stage1' applications.

For example, Seltek offers data processing services, customised software products parallel to offering physical hardware products such as power measurement systems and data loggers. The data processing business taught Seltek to use the Internet for acquisition of 'raw-material' (remote access of customer's data) and delivering the

‘finished product’ (processed data) on-line – this is a classic case of linking up up- and down-stream value chains in virtual space (Benjamin and Wigand, 1995).

On the other hand, the remaining three case firms’ product ranges are mainly hardware products and, except Digitimer’s use of the VTS for component ordering purposes, Internet usage of the remaining case firms remained confined to ‘Stage 1’ applications.

It can therefore be safely concluded that it is this technological orientation of the mindsets of the owner-managers of these small firms that has acted as key stimuli to connecting to the Internet as soon as it was available for public/commercial use. And it is also this unique mental orientation that sees the Internet as a technological breakthrough: in a parochial rather than more strategic context. Because, the owner-manager’s ”mental models” (Senge, 1990:174) affect their ways of seeing the world and consequently dictate their own ways of making sense of their worlds, and in the end shape owner-managers’ actions (Senge, 1990), eventually, *‘new insights fail to get into practice because they conflict with deeply held internal images of how’* those owner-managers’ worlds work, and *‘images that limit’* them *‘to familiar ways of thinking and acting’* (ibid: 174).

On the one hand, these own ‘ways of seeing the world’ are inherent to human nature and deeply embedded in an individual’s psyche. From the interpretive point of view this ‘human nature’ and its relationship with its environment has important influence upon human organisations (Burrell and Morgan, 1979:260) as *‘all social science, clearly, must be predicted upon this type of assumption..’* because *‘human beings responding in a mechanistic or even deterministic fashions to the situations encountered in their external world’* (ibid:2).

For Burrell and Morgan (1979), on the one extreme human nature is completely controlled by the situation and/or the environment (s)he is in. On the other extreme human nature is completely *‘free-willed’* and a human being controls his/her own actions. In the context of small firms, as explained earlier, most are creations of their respective owner-managers to shape up owner manager’s personal values, beliefs, visions, aspirations etc. Controlling powers of these firms rest with their owner

managers and thus to a great extent each carry an explicit blue print of its own owner manager's personality. The decision making process of an owner-manager comes out of a mind-set which itself is controlled by a combination of the small firm's external operating environment and the 'voluntaristic human nature' part of an owner manager's mind or on a mix of situational and voluntary factors (s)he is in (ibid).

Thus, when the external operating environment is relatively more competitive and in flux, it takes up the dominant role in controlling the owner-manager's mind. In order to counterbalance this 'deterministic' dominance the opposite or 'voluntaristic' part of his/her mind takes a defensive stance which is consequently reflected in his/her actions. For example, this was seen in Cemac's non-growth strategic decision, and empowerment of an employee to deal with Internet related activities and maintenance of regular contacts with customers. In Seltek it was seen in an aggressive selling strategy. In Hanwell it was in an opportunistic marketing strategy. And in all of the case study firms' apprehensive and cautious approach to making on-line financial transactions. Conversely, when the environment is relatively 'softer' or of a 'closed' relatively stable type, then the 'free-willed' 'voluntaristic' side of the human mind prevails. This was observed in Digitimer's ritualistic 'daily morning tea-break' meetings so as to create an internal informal family environment.

However, seemingly in all cases the operating environments of these case firms control the mind-sets of respective owner-managers in a predominantly deterministic fashion, keeping their mind-sets engaged in solving day-to-day problems and resulting in clouding and shrouding of a 'voluntaristic', free-willed, creative and visionary side of their human nature. The overall effect is, despite being technically astute and well trained, that they are unable to visualise the vast potential of the ICT/Internet and therefore unable to utilise it more creatively to their advantage.

Integral to this, the economic constraints impacting on such small firms along with small market share and narrow product portfolio, emphasise a potential dimension of this view. The study suggests that those participant firms all agree on one point: the Internet is a cheaper mode of communication with their respective external environmental agents. At issue, is agreement as to the extent and ways ICT and the internet can moderate the relationship of the small firm and the external environment.

Thus, both the 'boat' (the firm) and the 'sailor' (owner-manager) have dictated the nature and form of uptake of the Internet and wider ICT by the participant firms. The culmination of the 'sailor' factor (that is the owner-manager's way of seeing the world) with the state of the 'boat' (that is firms resources, its market share, product portfolio and processes activities) leads to a situation whereby the visions of these small firm leaders are myopic and limiting their perception of the usefulness of the Internet, in the main as a cheaper alternative to traditional communication and advertising media.

It is safe to conclude that the uptake of the Internet by the case study firms as a vehicle for business is to some extent dependant on their external operating environment and the range of products/services they offer. For example, Seltek transcendancy into the '2nd. Stage' (Angehrn, 1997) of internet usage by utilising it as a media for networking with its overseas group members and suppliers and also using it as a media for product distribution (collecting customer's data remotely on the Internet and delivering processed data/information) has achieved some degree of 'sophistication' by partially linking up value chains up-stream. But like the other case farms, its management fails to visualise the Internet's potential in the wider context of using the net for providing on-line service information or communicating with its customers interactively. This behaviour supports the view that these owner-managers' shortcomings relate significantly to ability to 'double loop' learn and are viewing the environment from their own 'single loop' existing mindset perspectives.

Integral to this study, therefore, is the revelation of clear facilitating forces which impact the uptake of ICT and the Internet technologies within small business:

- Owner-manager mindset (shaped by deterministic situational and voluntary factors), views, abilities, attitude and motivations. Here the technological orientation and experience bases are, unsurprisingly, key factors of ICT usage.
- Owner-manager ability levels and educational background.

- The nature of the external operating environment: for example, the need to attempt to keep abreast of economic and technological change.
- Attitudes, abilities and motivations of key actors on the boundaries of the small firms activities: for example, the ability and willingness of suppliers to enter two-way communication in an internet mode of operation.
- The nature and form of small firm markets: for example, relatively uncertain and dynamic markets will be more likely to produce a 'push' factor to the small firm uptake of 'deeper' use of ICT, say to keep up with competitive activities. More stable or static markets may foster an owner-manager perception of 'safeness' or 'cosy-cosiness'.
- The nature and form of products which service those markets: for example, some products can be traded and distributed on the Net (such as the sale of information): some products require component parts or other inputs convivial to the set-up of a small business-supplier relationship which is Internet-based.
- The nature and form of management and control processes within particular small businesses: for example, small business potential to nurture systems and control activities which cement effective small business/supplier and/or small firm/distribution channel relationships.
- Cost of particular ICT applications vis-à-vis owner-manager perceived benefits: thus for example, if cost of a particular application is perceived as affordable by an owner-manager and (s)he recognises its potential for adding value by providing an output beneficial to the business, facilitating forces are in place.
- Owner-manager perceived simplicity or complexity of application and use.

12.1.5 Q 5: What are the key constraining forces (including people-oriented, financial and business oriented forces) restricting the uptake of such management vehicle?

This study indicates that vis-à-vis large companies small firms can usually be considered a unique problem-type. This problem-type virtue of small firms evolves out of various factors such as idiosyncratic management style which is largely dependant on the owner-manager personality, unstable and unknowable operating market situations, small product portfolio, narrow market share, limited resource base and economic constraints. In short, small businesses face problems of a nature that do not impact large companies.

The study of the participant firms indicates that their operating environments are unstable due to the firm's vulnerability in that these firms are under the constant threat of competition, both domestic and from overseas competitors. Seemingly, they are relatively helpless in the face of stronger competitors or the vagaries of the economic ups and downs both in the national and international contexts. As a result, with their specialised product portfolio, narrow customer base and meagre resources these firms are often in a precarious position within their operating environments. The management of these firms are frequently in a stressful situation where the line between survival and extinction is very thin. Added to this complexity is the lack of adequate management training on the part of the owner managers of these firms. In fact the study unfolds that none of the senior managers of these firms has formal management training of any kind.

Seemingly, this co-existing environmental volatility and small firm vulnerability stymies further growth of these firms. For example, one of the participant firms' (Cemac Ltd.) management is reluctant to expand any further due to frequent changes in central government's industrial regulations. While another participant firm (Digitimer) does not want to grow any further due to risks involved in diversifying into an 'unpredictable' and 'unknowable' new market sector or, to expand within a market sector that has a limited customer base.

The key issue here is that like many other small firm these high-tech. small firms operate within an unpredictable and unknowable environment. These firms struggle ceaselessly to stay in business. Their financial positions restrict their abilities to hire trained personnel or to train existing employees, to impart the expertise required for handling such environmental situations. Moreover, this resource starvation along with the contumacy and mental model of the owner-manager(s) blurs their vision to understand the changing nature and phases of their operating environments.

For example, one of the participant firms uses the Internet as a novel media to service its customers through data processing. However, its management was unable to focus its sight any further in the context of other possible strategic business application of the Internet. In fact, Seltek's management is probably too reliant on its sales team in new business generation to explore the business possibilities the Internet could offer in this respect, because, for the owner manager the Internet's only viable application is as a conduit for informal communication.

Again, the type of product (physical or informational/data) greatly dictates these firms' use/non-use of the Internet for advanced commercial purposes. For example, with the participant firms whose products are of a more physical nature, their Internet application is mainly confined to 'stage 1' use, that is, to its use as a cheaper alternative of a telephone answering or fax machine, as discussed in the previous section. In these cases the participating firms' learning remains predominantly a 'single loop' type.

One can thus begin to tease out key restraining factors restricting the uptake of Internet related management vehicles. Small business owner-managers' mental constructs, inadequate managerial training together with the inherent problem-types associated with small firm development culminate to create a complex situation where manager(s) are often drawn into a single-loop learning process resulting in limited strategic learning from their environmental change situations. The following key factors constraining ICT uptake within small businesses begin to emerge:

- *Owner-manager mindset:* It is no surprise, if one is to portray owner-manager mindset as a facilitator to small business uptake of ICT, that

mindset (shaped by deterministic situational and voluntary factors), on many occasions will be a constrainer to that uptake. For example, this study reveals owner-manager perception that the web is a complex platform which is time consuming to search and confusing in its offerings.

- *Owner-manager ability level:* again if owner-manager capabilities facilitate ICT uptake, one cannot be surprised that low-level ability levels can constrain. However, there are other interactions which need qualification. For example, owner-manager perception of complexity of particular ICT applications can 'crowd out' any owner-manager acceptance that some base training can quickly produce owner-manager capability of using an application to the benefit of his/her business. Here, one must also consider owner-manager attitude to the value of training and the use of external experts or assistance as potentially constraining.
- *Unique problem-types potentially impacting a small business:* for example, size-related constraints such as ability to raise reasonable cost finance can put investment in information technologies down the investment list of some small firms.
- *Owner-manager learning mode or style:* some people orient toward single loop (simple) learning. An owner-manager needs to double loop (complex) learn if ICT applications are to be pushed beyond a routine, operational usage into a more strategic development vehicle.
- *The nature of the external operating environment:* if small businesses are predominantly facing unknowable, unpredictable open-ended change situations and they fail to identify and act upon that change, then the danger is that they will be pushed into an internally focused 'fire fighting' mode of management. Here, the inability to break out of such management mode will give little time for considering the anchoring-in of ICT applications (and, ironically, it may be that such ICT applications could help the small firm to

kick-out of the 'fire fighting' spiral and better understand external change situations).

- *The nature of the small firms markets and product/service offerings:* if some markets and products are convivial to ICT uptake, then others are likely to be less so. As an extreme example, a market trader in a relatively static market will receive less of a 'push' force than a typical growth oriented small firm, which helps make the point that owner-manager perception of a cosy-cosy market is likely to constrain consideration of potential ICT usage.
- *The commensurability of organisational management processes and activities to ICT applications.*
- *Cost and risks as perceived by the owner-manager vis-à-vis the perceived benefits:* for example, the savings of conducting transactions may be considerable. Some owner-managers view ICT as high cost; others view conducting of financial transactions as risky. Occasionally cost and risk will indeed be 'actual'; on other occasions it may be a psychological owner-manager constraint. In all cases owner-manager willingness and ability to determine the potential benefits to the business will be a key issue.
- *The orientation of ICT designers, developers and companies to provide ICT products and services to small businesses-* and their willingness and ability to recognise and address the unique small business problem-types and mindsets discussed above.
- *Lack of real understanding of the small business strategic learning process.*

12.1.6 Q 6: What are the key sources and inputs of small business strategic learning. And how do small businesses transform externally derived insight and information into organisational learning in terms of foundation for adjustment to markets, products and/or process activities?

Since the advent of the Internet a few years ago for domestic and commercial uses much has been spoken and written about its potential as a business tool.

It is said that for businesses, information is a vital tool for competitor build up of intelligence in today's post-industrial environment, because easy availability and flow of information today makes it hard to keep secret, over a considerable length of time, the unique production processes and/or production activities of a particular firm. On the other hand, in today's environment a firm's survival or demise is largely dependent on its ability to acquire, select and process information relevant to its line of activities.

In the context of small business this is largely true in that although they are supposedly innovative, flexible and maintain their respective niche market positions the easy availability of information poses a great threat to their holding of market positions in that the easy availability of information can lead to the convergence of competitors in their attempts to carve out a slice of that market. In the same vein, this availability of information could also help a small firm to outwit its competitors if that firm were able to pick up the right information at the right time.

This leads one on to the issue that small firms need to learn how to acquire data through scanning their own external environments and to extract information relevant to their markets, products, and processes activities. And, critically, to be able to 'work that information through' in the specific context of the small firm to determine its strategic significance and which changes in organisational behaviour are appropriate. There is no all-in-one recipe available to teach or learn this information gathering-extracting-application process. Management has to learn and customise the process to fit its own internal and external environmental requirements. That is to say a small firm must learn by itself and often through trial-and-error and through experimentation so as to discover the best practice method.

In the context of this best-practice learning orientation, a parallel could be drawn between this organisational learning and the learning practices of a living organism in that today's small firms should learn so as to re-adjust their organisational markets, products and processes activities to fit the situation and meet environmental demands. This is only possible through maintaining communication with external environmental agents such as business partners, customers, suppliers and even with competitors so as to learn from each other through exchanging views, ideas and information and at the same time, based on this acquired information, determine how to readjust organisational activities to meet environmental demands and achieve a sustainable competitive position.

Despite their limited resources it is possible for small firms to achieve this through more effective utilisation of the virtues of the Internet. With its negligible maintenance cost the Internet offers the possibility of enhancing small business learning-through-scanning of the operating environment. Key is an organisation's ability and willingness to transform itself through instilling a learning process fitting to its internal culture and external environmental demands.

The study reveals that some traces of such learning process exist in each of the participant small firms. However, these learning processes are rather more spontaneous than induced. The existence of information retrieval (Digitimer Ltd.), scanning of competitor's web sites, two-way communication with customers (Digitimer Ltd.) and information exchange with overseas group members and suppliers (Seltek Ltd.) are indicative of such learning processes. However, the study does not reveal any conscious 'organisational learning' activities in this domain within the firms.

From the observed activities of these firms it could be argued that they remain predominantly in a lower level of learning (single-loop learning) in that most of them still maintain the view they had a few years ago that the Internet is in the main a cheaper alternative to traditional communication/advertising media.

It appears that the leaders of these firms along with their contumacy and idiosyncratic mindset predominantly are in a 'single-loop learning mode of activity. Their technologically oriented mental models pull them into this perpetual learning cycle. They are therefore unable to fully visualise information's vital role in their organisations' activities. (Porter and Miller, 1985).

It has been explained that in an unpredictable and unknowable operating environment information is a vital tool for small business's survival and prosperity. Although these participant firms are seemingly successful to date, their future vulnerability may increase with their inability to understand this issue. It appears that their own future survival depends on their ability to fully 'learn-how-to-learn' through picking up signals from information generated by data emitted by their respective environmental agents, and 'working it through' in terms of its strategic significance with regard to potential for adjustment to the firm's existing markets, products and/or processes activities. Integral to this learning process is the build up of understanding of ways to transform their products and processes in response to their customer's changing tastes and market demands.

There are thus real possibilities that with the increasing help of Internet based data /information gathering processes, small firms may more effectively transform their traditional organisational processes and activities to an information-oriented organisation of the new era. In this transformation process the traditional 'single-loop' learning process can where necessary be replaced by 'double-loop' learning processes. For obvious reasons such transformation cannot be achieved overnight.

A key issue emerging from this research study is one of 'mutual recognition' of the small business management learning process. There are two key sets of actors involved in the attempts to enhance ICT uptake and usability in a small business context: the small business owner-manager/senior manager and the developers/suppliers of ICT applications. Where the concept of mutuality comes into play is in the need for both sets of actors (the small business managers and the developers/suppliers) to begin to better understand the small business management strategic learning process. A rational model of that learning process would advocate sequential step discovery, choice and action strategic control activity- small business

management strategic thought processes are likely to involve a messy, intertwined non-sequential discovery/choice/action set of activities. A straight forward feed-in of information is unlikely to 'feed' a discovery activity and automatically allow for subsequent choice and action (in terms of say market or product development activity).

The small business owner-manager is likely to receive data or information as a stimuli, but will not react to that stimuli: (s)he will have to interpret that information in the small business specific context and then react to that interpretation; this learning/interpretation activity may well require 'try out' or experiment to fully learn the significance of the initial information- this discovery and choice may derive out of the actual action (see also the tentative conclusions of Wyer, Mason and Theodorakopolous, 2000). The message for ICT developers and for small business ICT users: do not expect base information input to feed effective small business strategic change- all actors need to better understand the complex small business strategic learning process if the uptake and usage of ICT in small business strategic development is to reach its full potential.

12.2 Implications of Research Findings:

Up till now very few investigations have been conducted to help move toward a comprehensive understanding of the issue of the impact of the Internet on the strategy and strategy development processes of small firms and the consequent emerging organisational change processes within such a firm.

This research has located two factors behind such a void. Firstly, until recently the SME sector was a neglected area of interest in that a popular notion about SMEs was that they are nothing more than scaled-down versions of large businesses whereby it was assumed that business models and theories generated for large businesses may also be applicable for small businesses. However, contrary to this notion recent research in this domain has demonstrated that strategy development and organisational change processes in small businesses is a complex phenomena and what is known in this context constitutes only the tip of an iceberg. Consequently, the extant knowledge base is developing in this area but still nebulous. The second factor

is the 'newness' of developments in the area of ICT, and thus the short time frame regarding small business uptake of such technologies.

This present research is therefore, exploratory in nature with a purpose of beginning to unfold understanding of the way(s) small firms adjust and readjust their markets, products and processes activities in the face of change in the external operating environment.

In order to explore such a phenomenon this study used a case study framework in which organisations are considered as social entities. Without human beings an organisation is meaningless. Therefore, the likelihood of detecting and understanding change or transformation processes within a small business is only possible through communicating with the persons involved with the organisational activities and through studying their behaviour(s) and taking on board their standpoints and opinions.

In this respect this study was able to make contribution on two fronts. Firstly, it was able to highlight some aspects of strategy development process within a small firm context and secondly, it was able to unfold some aspects of the impact of the ICT/Internet technology on the full development context of the small business, both at an operational and strategy development process level.

In the context of small firm strategy development processes this study was able to reveal and thus support some areas of existing research contribution that in small firms there neither exists a significant trace of rational long-term planning modes of strategy development activities, nor do they have requisite organisational abilities or management resources to instigate such a process. On the other hand, considering the strengths and weaknesses of small firms, along with the vagaries of their operating environments, it appears that it is not feasible for them to rationally plan long-term. The study found that participant firms' strategy development processes are short-term, flexible, emergent and sometimes spontaneous. In short, they certainly plan on a daily basis, often on a weekly or monthly basis, but do not apply formal step process planning over a 'years in advance' time frame.

With regard to academic positioning of the study, the strategic development findings highlight how understanding of owner-manager and manager activities and practices embedded in day-to-day organisational activities are a key to understanding what constitutes small business 'strategic management'. As discussed in section 12.1.1. above, Johnson et. al. (2003) are currently drawing attention to the need to address limitations of strategy *process* research, in that it leads to unfold understanding of the 'microstrategy' activities and practices of managers that have strategic outcomes and which really make up the ultimate development processes. This study begins to reveal the kind of learning actions and practices, such as 'try out' and experiment; and day-to-day learning interfaces with key knowledge holders such as suppliers. It is this understanding and insight which in turn begins to reveal the real potential role of ICT in facilitating such 'strategic management' actions in small firms, and thus of strategic context.

Within the ICT context, this study is juxtapositioned alongside those academic works attempting the development of frameworks to guide strategy building processes amongst companies looking to re-design or innovate their products/services in the context of newly emerging enabling and constraining forces generated by the evolving Internet technology. A leading proponent in this respect is being Angehrn (1997). This study differs, however, in drawing attention to the informalities and idiosyncrasies of smaller firm development and how future research will need to deepen understanding of this phenomenon in a strategy development process context if ICT is to be ultimately fully exploited in the small business strategy building process.

On the question of the Internet there is no doubting that the participant firms were able to recognise this technology's technical potential, but for some this constituted considering it as another new technical gadget and with which they were quickly able to discover its potential advantages, as a communication or advertising channel, over traditional media. On the downside, however, the leaders of these firms were predominantly unable to visualise the fact that the real potential of the Internet lies in its possible strategic business application(s).

The study further revealed that in the context of their organisations' activities these technically-oriented mindsets of owner-managers of these firms lack adequate management skills and business acumen especially with regard to the importance of perceiving, and judging, external world events and change therein from business/commercial perspectives. Such parochial views make their firms susceptible to failure and potential victim of sudden external environmental changes.

Finally, the study highlights that the success and failure of inducement of a new method, idea or process within a small business culture can not be judged by isolating the event from its relevant full contextual organisational perspective. This investigation provides an holistic contextual focus of the small business in its external operating context and offers a 'frame' for consideration of the impact and potential of ICT within that context. The findings draw attention to the potential and the need for ongoing research in such total context in order to contrive to add 'richness' and 'thickness' of understanding of two complex small business development phenomenon if the true potential of ICT, and the Internet in particular, are to be realised for smaller firms. The phenomena are (a) small business strategy development processes, and (b) small business learning processes. The tentative findings of this research suggests a 'learning' and 'emergent' dimension to small firm strategic development processes and a key role of ICT in facilitating such 'learning' in unknowable and unpredictable change environments and thus a need for a future firming up of understanding in this respect.

12.3 Limitations of the Study:

The purpose of the investigation was to explore the influence of the Internet and wider ICT applications on the strategic development of small firms. In this regard the study selected a small number of electronic manufacturing firms for empirical study. Due to the sample size it is difficult to generalise in the traditional sense. The study does not facilitate generalisation to statistical inference, though arguably it does offer potential for generalisation to analytical base.

A further limitation of the study is that all case studies were constructed based on interviews with the owner-/senior-managers of the participant firms and on the data

and documentation supplied by them, together with that available on web-sites of these organisations. Therefore, the structure of the cases is dependant on the validity of the data supplied and facts disclosed by the interviewees during the interview. The full triangulation process intended at the design stage of the study will only reach its full context in an intended future longitudinal study of the participant firms. Time and resources constrained the extent of the triangulation of this MPhil stage of study.

In theory, the strategy building process largely depends on the availability of information and the abilities of the strategy formulator(s) to interpret the information correctly in order to pick up the correct signals at the correct time. Consequently, a process of learning is involved within this whole strategy building and planning process. Although this study touched the processes of organisational learning, this was, in the main, only when such a focus became an inevitable part of the investigation. In terms of utilisation of analytical frames of reference to impose understanding of strategy development within the participant firms which was clearly non-rational long-term planning in nature. Since the approach to the study was one of relatively short interval interface with the case firms, it has not been possible to produce depth of focus over time on the nature and form of the small business learning activities and processes in a manner which would reinforce the tentative conclusion unfolded in the analysis with regard to the real potential for ICT approaches in an organisational learning facilitating context.

Despite the above limitations, however, the study was able to bring to the fore important issues with regard to the strategic significance of the Internet to small businesses. On the other hand, it is not extraneous to mention here that because the technology is in its nascent state of evolution there are many questions that are yet to be answered and these need to be posed within a context of deeper understanding of the distinctive managerial and organisational features of the small business.

12.4 A Concluding Message for Small Business Support Providers:

ICT has great potential in aiding and underpinning small business development. That potential is already being partially realised. Current calls for ensuring *integration* of

ICT application (and ongoing intensification of that application) and corporate strategy of business organisations also holds significant validity.

However, the 'easy' way to conceptualise such integration is to view that strategy formation process in traditional, rational, structured form (involving external analysis to reveal opportunities and threats; internal analysis to reveal strengths and weaknesses: SWOT analysis to identify long-term development (corporate) objectives and pre-determined strategic development paths; implementation and control (and review). Integral to such rational, structured strategy formation process is the assumption that functional areas of organisational activities will simply formulate sub-objectives (i.e. for production, marketing, human resource management and finance) which support the identified central corporate objectives. Such a tidy and formal overall development process provides a similarly tidy 'operating frame of reference' to guide design and development of supporting ICT applications – i.e. ICT applications that support the corporate strategy formation process. One can, for example, reflect upon Kotler's (1994) marketing information system for evidence of how ICT can be developed to support every step of this conceptualisation of the strategy formation process in its rational form.

But perhaps small business support providers need to reflect more emphatically on key dimensions of the small business strategy development processes revealed within this study, including:

- The predominant unpredictability of external operating contexts impacting on contemporary small businesses.
- The lack of evidence of long-term rational planning type modes of small business strategy development processes.
- In their place, the need for owner management to learn about external change situations from a variety of sources and through a variety of activities.

- The different ways that the case study firms do anchor in ICT, and the Internet in particular to facilitate such learning or strategic control – and the ways in which their use of ICT in routine operational applications can be viewed as activities of base ‘day-to-day’ control.
- The possibility that small business strategy development may be an emergent rather than pre-determined development path phenomenon (given the nature of contemporary change environment).
- The fact that the case study owner-managers do double-loop learn, but do not explicitly understand the nature and form of the strategic learning process, and thus probably perpetuate a more simple single-loop learning process.

Such insight begins to unfold a guiding message to all those involved in small business support provision. Integration of ICT and small business strategy may require a creative conceptualisation, and certainly a shift in mindset away from formality and rationality of underpinning organisational strategy formation processes. ICT needs to be developed so as to facilitate ‘organisational learning’ in the small firm – a facilitation of ‘learning activities’ on the boundaries of the small firm’s activities, a nurturing of a small business ‘strategic awareness’ capability, an effecting of internal small business learning activities that transcend a mere pick-up of external data/information into appropriate change in small business strategic markets, products and/or processes activities. And integral to this is certainly an application of ICT to the routines of the day-to-day which manifest as tight short interval organisational control in which, in turn, provide management ‘space’ to effect the more strategic organisational learning through more creative and innovative uses of ICT, and the Internet in particular.

In the final analysis, the fundamentals of this guiding message are that a ‘maximisation’ of ICT application in small business is likely to result from acceptance that small businesses operate in predominantly unknowable operating environments which require that they organically feel and learn their way along (rather than

rationality long-term plan) – and thus that both ICT(and other) support providers, and small businesses themselves, need to better understand small business strategic learning and development processes. In this way, ‘integration’ of ICT and small business strategy development can be more effectively nurtured.

Appendices

APPENDICES

Appendix I: Pilot Survey Questionnaire

PILOT SURVEY QUESTIONS

1. Name of the interviewee
2. Position within the organisation
3. Number of employees
4. How long do you have the Internet
5. What do you use the e-mail for
6. Contacting: suppliers, distributors, customers
7. Make any financial transaction
8. What do you use the web-site for
9. Do you use it for:
 - (a) Marketing
 - (b) Advertising
 - (c) Any other business use
10. The web presence:
 - (a) Is it better than conventional advertising media?
 - (b) If so why is it? [cheaper, world-wide coverage reaching to more potential customers and markets]
 - (c) Does it help you to attract more enquires and businesses?
 - (d) Do you think it gave you any advantage over your competitors in terms of competitive advantage?
 - (e) Are you able to be in the market first by means of it?
11. Do you have any changes made, or you feel it is necessary to have some changes to be made within your organisational structure or strategies such as to retrain employees, empower one or more employees specifically to take charge of the Internet related activities of the organisation or do you feel need to recruit some trained staffs, forming of a new department or a sub-section in this regard in the future?
12. Did you require extra investment or feel to invest into this new technology so that it will be integrated more within your organisation?
13. Do you think the Internet gave your organisation any other real advantage?
14. For example cost advantage, faster/cheaper communication, as an advertising and/or marketing media etc.
15. What is your overall general opinion about the Internet?

Appendix II: Case Study Interview Instrument

CASE STUDY GUIDING INTERVIEW INSTRUMENT

Saibal Sen

Do Montfort University

March 27, 2001

- 3) What have been the key internal factors which have:
 - (i) Facilitated the firms development
 - (ii) Constrained or hindered the firm's development
- 4) What are the key success factors underpinning the firm's development

SECTION C: Functional/Operational activities within the firm:

1) PRODUCTION:

- a) Describe the nature and form of the current production processes
- b) What proportion of production activity utilises labour: technology
- c)
 - (i) How has the nature and form of production processes changed over time.
 - (ii) How is IT used in production and in the administrative support activities within the firm
- d) Is any part of the process out-sourced
- e) How does the technology used compare to that of state-of-art competitors
- f) Who are the firm's key competitors

g) What are their key success factors

2) MARKETING:

(a) How does the firm unfold understanding/learning about customer-base/potential new customer-base.

(b) How does it translate such understanding into change action (to markets, products and/or process activities)

(c) Does the firm has a formal marketing plan

(d) How does the firm monitor competitor activities

(e) What form of communication does the firm use to communicate with customers/potential customers (e.g. advertising, promotion, word of mouth etc.)

(f) What distribution channels does the firm use

(g) How are decisions made regarding:

- Market development

- Product development

- Any retrenching activities
- Tactical changes to pricing, advertising, promotion

(h) What is the firm's distinguishing competitive posture in the marketplace (e.g. in terms of:

- Quality
- Range
- Reputation
- speed of delivery
- price

etc.)

(i) Clarify the role/potential role of IT/Computers within the firm's marketing activities:

(i) In deriving insight and understanding about external change situations and customer tastes/behaviour/needs

(ii) Communicating to customers regarding their specific requirements:

(iii) A general method of communicating/advertising the company products:

(iv) Internal use of IT (and how):

(j) To what extent has the use of IT in a marketing context improved the performance

Of the firm:

(k) How has IT facilitated such improvements:

3) PEOPLE AND PEOPLE MANAGEMENT:

(a) What percentage of labour are:

- unskilled:
- Semiskilled:
- Skilled:
- Managerial:

(b) Is recruitment of quality workforce/management problem; if so how?

(c) How is the firm structured:

(d) How would the interviewee(OM) describe the people management approaches/styles with the firm:

(e) What is the educational background/training background of the management:

(f) What is the firm's attitude towards learning:

(g) Would the firm use external experts such as:

- consultants
- bank advice
- accountants
- business links

- etc.

- (h) Are workers organised on a flexi (e.g. multi- role) basis:
- (i) Have workforce ever constrained attempts for change within the firm
- (j) Who makes the key decisions within the firm (and within its functional areas of activities)
- (k) How is IT used to facilitate and/or support the work activities of
- unskilled workers
 - skilled workers
 - management
- (l) How are workers/managers trained in the area of IT
- (m) Have you experienced any resistance to the uptake of IT (from workers/managers)

4) FINANCE:

- (a) What is the financial structure of the firm in terms of own finance: external borrowings
- (b) Has shortage of finance ever constrained any developments within the firm

- (c) Does the firm suffer from cash flow difficulties (include causes)
- (d) Does the firm adopt formal financial management systems or approaches in the management of working capital and long-term capital (such as budgeting forecasting or long-term planning)
- (e) Who makes the decisions regarding fixed and working capital issues
- (f) Does the firm has financial objectives in terms of:
 - levels of external borrowings
 - use of external :internal sources of funds
 - future turnover levels
 - managing of debtors/creditors
 - return on capital employed
- (g) In what ways are functional and financial management activities underpinned by IT

SECTION D: Management within the 'Big Picture' of development

- (1) Focusing on the current balance of markets, products and processes activities, how have they come about:

A pre-analysed, pre-determined (intended) development path

Changes in activities emerged through learning (e.g. through experiment/or trial and error/trying things out)

Other

(2) A pre-determined long-term development path, in theory, could be achieved through formal long-term rational planning:

- external analysis (opportunities/threats)
- internal analysis (strengths/weaknesses)
- SWOT analysis
- Formalise long-term objectives
- Determine development strategies
- Implementation
- Control and review

What is the OM's view of the feasibility of such a management approach within his/her business

(3) How are external change situations (of opportunities and threats) identified?

(4) How are internal decisions made regarding such change in terms of identifying appropriate adjustments to existing markets, products and/or processes activities.

(5) In what ways is future development planned

- in the form of written plan
- in the form of a mentally held planning framework
-

(6) What role does O/M intuition and judgement play in decision-making

(7) What role do IT applications play in the context of long-term development
(i.e. effective adjustment to methods, products and/or processes activities)

Appendix III: BIBLIOGRAPHY

BIBLIOGRAPHY:

Ackoff (1984) in Locke, R.R. (1989) *Management and Higher Education since 1940*, Cambridge University Press, N.Y.

Ahrens, J. and Esquer, G. (1993) *Internet's Potential as a Global Information Infrastructure: A Case Study and Assessment*, *Journal of Global Information Management*, Vol. 1(3), pp. 18-27.

Amstrong, A. and Hagel III, J. (1996) *The Real Value of ON-LINE Communications*, *Harvard Business Review*, May-June, Vol. 74(3), pp. 134-141.

Anderson, C. (1995) *The Accidental Superhighway*, *The Economist*, 1st.July, pp.3-6.

Angehrn, A. A. (1997a) *Developing Mature Internet Strategies: Insights from the banking Sector*, *Information Systems Management*, summer, pp. 37-43.

Angehrn, A.A. (1997) *Designing Mature Internet Strategies: The ICDT Model*, *European Management Journal*, vol. 15(4), pp. 361-369.

Angehrn, A.A., (1997b) *The ICDT Model: Towards A Taxonomy of Internet-Related Business Strategies*, Working Paper, INSEAD, France.

Annual Marketing Report, (1987) AMR - 1987, Hertfordshire County Council.

Aram, J.D. and Cowen, S.S. (1990) *Strategic Planning for Increased Profit in the Small Business*, *Long Range Planning*, Vol. 23(6), pp. 63-70.

Archer, S. (1988) "Qualitative Research and the Epistemological Problems of Management Disciplines", in Pettigrew, A. (ed.) *Competitiveness and the Management Process*, Blackwell, London.

Argyris, C. and Schon, D.A. (1974) *Theory in Practice*, Jossey Bass, London.

Attewell, P. and Rule, J.B (1991) *Survey and other methodologies applied to IT impact research experiences from a comparative study of business computing*, In *The Information Systems research Challenge: Survey Research Methods*, Vol. 3 Ed. K.L. Kraemer), PP. 299-315, Harvard Business School Press, Boston, MA., Op cit.

Baily, J. and Bakos, Y. (1997) *An Exploratory Study of the Emerging Role of Electronic Intermediaries*, *International Journal of Electronic Commerce*, Vol. 1(3), Spring.

Bakos, Y. (1998) *The Emerging Role of Electronic Marketplaces on the Internet*, *Communications of the ACM*, Vol. 41(8), pp. 35-42.

- Ballantine, J., Levy, M. and Powell, P. (1998) Evaluating Information Systems in Small and Medium-sized Enterprises: Issues and Evidence, *European Journal of Information Systems*, Vol. 7, pp. 241-251.
- Bamberger, I. (1989) Developing Competitive Advantage in Small to Medium Size Firms, *Long Range Planning*, Oct., Vol. 22(5), pp. 80-88.
- Banister, P., Burman, E., Parker, I, Taylor, M. and Tyndall, C. (1994) *Qualitative Methods in Psychology: A Research Guide*, Open University Press, Buckingham.
- Barker, N. (1994) *The Internet as a Reach Generator for Small Business*, Unpublished MBA dissertation, Durham University, UK
- Barker, N., Fuller, T. and Jenkins, A. (1997) Small Firms Experiences with the Internet, *Proceedings of the 20th. ISBA National Conference*, Belfast, November.
- Barrow, C. (1993) *The Essence of Small Business*, Prentice Hall, London.
- Benbassat, I., Goldstein, D.K. and Mead, M. (1987) The Case Research Strategy in studies of Information systems, *MIS quarterly*, Sept., pp. 368-385.
- Benjamin, R. and Wigand, R. (1995) Electronic markets and Virtual Value Chains on the Information Superhighway *Sloan Management Review*, Winter, pp. 62-72.
- Berry, M. (1998) Strategic Planning in Small High Tech Companies, *Long Range Planning*, Vol. 31(3), pp. 455-466.
- Bikson (1991) in Bryman, A. (1996) *Quantity and Quality in Social Research*, Routledge, London.
- Bloch, M., Pigneur, Y. and Segev, A. (1996) *On the Road of Electronic Commerce - A Business Value Framework, Gaining Competitive Advantage and some Research Issues*, The Fisher Centre for Information technology and Management, University of California, Berkeley.
- Bolton, J.E. (1971) *Report of the Committee of Enquiry on Small Firms Cmnd4811*; HMSO, London.
- Bonniface, D. R. (1994) *University of Hertfordshire MBA Research Methodology Study Notes*, PP-4.
- Bonniface, D.R. (1995) *Experiment Design and Statistical Methods*, Chapman and Hall, London.
- Booz-Alan and Hamilton, (1997) *The Way Forward in Electronic Commerce for SMEs*. "G7 Global Marketing for SMEs "First Annual Conference, Bonn, 7-9 April.
- Bryman, A. (1996) *Quantity and Quality in Social Research*, Routledge, London.

Burrell, G. and Morgan, G (1979) *Sociological Paradigms and Organisational Analysis*, Heinemann, London.

Buss and Vaugan (1987) *Revitalizing the Mahoning valley Environment and Planning C, Government and Policy*, Vol. 5, pp. 433-447.

Business in the Information Age: International Bench Marking Study 2003, Report Prepared for DTI by Booz Allen and Hamilton, UK.

Camillus, J. C. and Datta, D. K. (2991) *Managing Strategic Issues in a Turbulent Environment*, *Long Range Planning*, Apr., Vol. 24(2), pp. 67-74.

Cantillon (1755) in Barrow, C. (1993) *The Essence of Small Business*, Prentice Hall, London.

Carson, D. (1991) *Research Small Business Marketing, Marketing Intelligence and Planning*, Vol. 9(6), pp.7-9.

Carson, D. (1993), *A Philosophy for Marketing Education in Small Firms*, *Journal of Marketing Management*, 9, 2,189-204.

Cash, J.I. and Kosynski, B.R. (1985) *IS Redraws Competitive Boundaries*, *Harvard Business Review*, March/April, Vol. 63(2), pp. 134-142.

Cassell, C. and Symon, G. (1994) *Qualitative Methods in Organisational Research*, Sage, London.

Castells, M. (1996) *The Rise of Network Society*, Blackwell, Oxford.

Certified Accountant (1994) *How Europe can help the Small Firms*, June, Vol. 86(6), pp.21.

Chakravarty, B. (1997) *A New Strategy Framework for Coping with Turbulence*, *Sloan Management Review*, Winter, pp. 69-82.

Chan, S.-Y. and Foster, M.J. (2001) *Strategy Formulation in Small business: The Hong Kong Experiences*, *International Small Business Journal*, Vol. 19(3), pp. 56-71.

Chaston, I., Badger, B., Mangles, T. and Sadler-Smith, E. (2001) *The Internet and e-Commerce: An Opportunity to Examine Organisational Learning in Progress in Small manufacturing Firms*, *International Small Business Journal*, Vol. 19(2), pp. 13-30.

Chen, J. and Williams, B.C. (1993) *The Impact of Microcomputer Systems on Small Businesses: England 10 Years later*, *Journal of Small Business Management*, Vol. 31(3), pp. 96-102.

Chen, J. and Williams, B.C. (1998) *The Impact of Electronic Data Interchange (EDI) on SMEs: Summary of Eight British Case Studies*, *journal of Small Business management*, October, Vol., pp. 68-78.

Chetty, S (1996) The Case Study Method for Research in Small- and Medium-sized Firms, *International Small Business Journal*, Oct.-Dec., Vol. 15(1), pp. 73-85.

Child, J. (1970) Organisational Structure, Environment and Performance: the Role of Strategic Choice, *Sociology*, Vol. 6(1), pp. 1-21.

Chisnall, P.M. (1989) *Small Firms in Action: Case Histories in Entrepreneurship*, McGraw Hill, London.

CIA The World Fact Book 2002 – United Kingdom_files.

Cm 1559-1, Statement on the Defence Estimates 1992: Ministry of defence, HMSO, 1992.

Cockburn, C. and Wilson, T.D. (1996) Business Use of the World-Wide Web, *International Journal of Information Management*, Vol. 16(2), pp. 83-102.

Cohen, W.M. and Levinthal, D.A. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation, *Administrative Science Quarterly*, March, pp. 128-152.

Covin, J.G. and Slevin, D.P. (1989) Strategic Management of Small Firms in Hostile and Benign Environments, *Strategic Management Journal*, Vol. 1, pp. 75-87.

Cragg, P. and King, M. (1993) Small-Firm Computing: Motivators and Inhibitors, *MIS Quarterly*, March, pp. 47-60.

Craig, R. and Poon, S. (1999) Small Business Internet Commerce Systems- Learning from the Pre-Internet Era.

Cresswell, J.W. (1994) *Research Design: Qualitative and Quantitative Approaches*, Sage, London.

Cronin, B., Overfelt, K., Fouchereaux, K. and Manzvanzike, T. (1994) The Internet and competitive intelligence: a survey of current practice, *International Journal of Information Management*, Vol. 14(3), pp. 204-222.

Cromie, S. (1991) The Problems Experienced by Young Firms, *International Small Business Journal*. Vol. 9(3), Apr.-Jun., pp.43-61.

Curran, J. (1988) Training and Research strategies for Small Firms, *Journal of General Management*, Vol. 13(3), Spring., pp. 24-37.

Dalley, and Hamilton, (2000) Knowledge, Context and Learning in the Small Businesses, *International Small Business Journal*, Vol. 18(3), pp. 51-59.

Dandridge, T.C. (1985) Children are not "Little Grown-Ups" Small Business Needs its Own Organisational Theory, *Journal of Small Business Management*.

- Dandridge, T. and Levenburg, N. (2000) High-Tech Potential? An Exploratory Study of Very Small Firm's Usage of the Internet, *International Small Business Journal*, Vol. 18(2), pp. 81-91.
- Daniel, E., Wilson, H. and Myers, a. (2002) Adoption of E-Commerce by SMEs in the UK, *International Small Business Journal*, Vol. 20(3), pp. 253-270.
- Danziger and Kremar (1991) in Gable, G.G. (1994) Integrating Case Study and Survey Research Methods: An Example in Information Systems, *European Journal of Information Systems*, Vol.3 (2), pp. 112-126.
- Dastur, S. and Angelides, M. C. (1997) Organisational Impact of Multimedia Information Systems, *Journal of Information Technology*, March, Vol. 12(1), pp. 33-43.
- Davenport, T.H. (1995) Think Tank, *CIO*, Vol. 9(6), pp. 30-32.
- Deighton, J. (1996) The Future of Interactive Marketing, *Harvard Business Review*, Nov.-Dec., Vol. 74(6), pp. 151-162.
- Delbecq, A., and Weiss, J.W. (1988) The Business Culture of Silicon Valley: Is it a model for the future? in *Regional cultures, managerial behaviour and entrepreneurship: an international perspective* (ed.) J.W. Weiss; New York, Quorum Books, 24-41.
- DeLone, W.H. (1988) Determinants of Success for Computer Usage in Small Business, *MIS Quarterly*, March, pp. 51-61.
- Department of Trade and Industries (1993) *Trading with the USA: A Practical Guide to doing Business in the US*, Dti, London.
- Dixon, N. (1994) *The Organisational Learning Cycle: How we can learn collectively*, Mc-GrawHill, London.
- Dodgeson, M. (1991) *Technological Collaboration and Organisational Learning*, Draft occasional Paper, Science Policy Research Unit, Sussex University.
- Dosi, G., Freeman, C., Nelson, R., Silverberg, G. and Soete, L. (1989) *Technical Change and Economic Theory*, Frances Pinter, London.
- SMEs and Electronic Commerce (1998) Directorate for Science, Technology and Industry Committee, DSTI/IND/PME(98) IS/FINAL, November.
- DTI Report (1997), Sept., pp 76-78.
- Dutta, S. (2000) *The Internet Revolution: What We Can Learn*, IN-SEAD Newspaper, Paris.
- Dutta, S. and Segev, A. (1999) *Business Transformation on the Internet*, Working Paper, 98-WP-1035, INSEAD, Paris.

Dyer, W.G. and Wilkins, A.L. (1991) Better Stories, not Better Constructs, to generate Better Theory, A Rejoinder to Eisenhardt, *Academy of Management Review*, Vol. 16(3), pp.613-619.

Easterby-Smith, M., Thorpe, R. and Lowe, A. (1996) *Management Research An Introduction*; Sage Publications Ltd., London.

Eisenhardt, K.M. (1991) Better Stories and Better Constructs: the Case for Rigor and Comparative Logic, *Academy of Management Review*, Vol. 16(3), pp. 620-627.

EU (1997), in Dti Home Page, October 18, 2001.

Fielding, N. (1996) in Punch, K.F. (1998) *Introduction to Social Research: Quantitative and Qualitative Approaches*, Sage, London.

Fielding, N. (1993) *Qualitative Interviewing* in Gilbert, N.F. (ed.) *Researching Social Life*, pp. 135-153, Sage Publications, London.

Fayol, H. (1949) *General and Industrial Management*, Pitman, London.

Finance of Small Firms – A Tenth Report, Bank of England, April, 2003.

Fletcher, M. And Harris, S. (2002) Seven Aspects of Strategy Formulation, *International Small Business Journal*, Vol., 20(3), pp. 297-314.

Freeman, C. (1982) *The Economics of Industrial Innovation*, Frances Pinter, London.

Fry, F.L. and Stoner, C.R. (1995) *Strategic Planning for the New and Small Business*, Upstart, Chicago.

FT3 (21.10.00) *From Back Room to Boardroom*.

Fuller, T and Jenkins, A. (1995) *Public Intervention in Entrepreneurial Innovation and Opportunism: Short cuts or Detours to the Information Superhighway?* Proceedings of the Babson Entrepreneurship Conference, London.

Gable, G.G. (1994) Integrating case study and survey research methods: an example in information systems, *European Journal of Information Systems*, Vol.3(2), pp. 112-126.

Galliers, R. D. and Land, F.F. (1987) Choosing Appropriate Information Systems Research Methodologies, *Communications of the ACM*, Vol. 30(11), pp. 900-902.

Ghosh, S. (1998) Making Business Sense of the Internet, *Harvard Business Review*, March-April, Vol. 75 (2), pp. 120-135.

Gibb, A (1992), "Can Academe Achieve Quality in Small Firm Policy Research", *Entrepreneurship & Regional Development*, 1992, 4, pp 127-144.

- Gibb, A.A. (1983) The Small Business Challenge to Management Education, *Journal of European Industrial Training*, Vol. 7(5), pp. 3-4.
- Gibb, A.A. and Davies, L. (1990) 'In Pursuit of Frameworks for the Development of Growth Models of Small Business'. *International Small Business Journal*. Vol.9 (1), October/December.
- Glaser, B. and Strauss, A.L. (1967) *The Discovery of Grounded Theory*, Archieve Publishing, London.
- Gore, C, Murrey, K and Richardson, B. (1992) *Strategic Decision-Making*, Cassell, London.
- Grønhaug, K. and Falkenberg, J.S. (1989) Exploring Strategy Perceptions in Changing Environments, *Journal of Management Studies*, July, Vol. 26(4), pp. 349-359.
- Gummesson, E. (1991) *Qualitative Methods in Management*, Sage, London.
- Hall, G. (1989) Lack of Finance as a Constraint on the Expansion of Innovatory Small Firms, in Barber, J., Metcalfe, J.S. and Porteous, M. (eds) *Barriers to Growth in Small Firms*, Routledge, London.
- Hamel, G. and Prahalad, C.K. (1989) Strategic Intent, *Harvard Business Review*, May-June, pp. 63-76.
- Hartley, K. *Economic Aspects of Disarmament: Disarmament as an Investment Process*, UN, 1993.
- Hartley, K., Hooper, N., Butler, B.R., Utterley, M.R.H. and Martin, S.D. (1995) *The Defence Sector in Bedfordshire and Hertfordshire, October: Research Monograph Series 4*, Centre for Defence Economics (1995), University of York.
- Hawkins, P. (1994) The Changing View of Learning, in Burgoyne, J., Pedler, M. and Boydall T.(eds.), *Towards the Learning Company: Concepts and Practices*, pp. 9-27, McGraw-Hill, London.
- Hertfordshire Local Economy Assessment, 2002, Hertfordshire Prosperity Forum, Hertford County Council, Hertford.
- Herzberg, F. (1966) *Work and the Nature of Man*, World Publishing Co., Cleveland.
- Hirschheim, R. A. (1992) Information System Epistemology: An historical Perspective, in Galliers, R. (ed.) *Information System Research Issues, Methods and Practical Guidelines*, Blackwell Scientific Publications, Oxford, pp. 28-60.
- Hoffman, D. and Novak, T.P. (1996) A New marketing Paradigm for Electronic Commerce, Paper submitted for the Special Issue on Electronic Commerce, *The Information Society*.

Holmes, S. (1992) Whatever Happened to the Pre-theory Debate? *Small Business Research*, Vol. 1(1), winter.

[Http://www.google.com](http://www.google.com)

Igbaria, M., Zinatelli, N., Cragg, P. and Cavaye, A.I.M. (1997) Personal Computing Acceptance factors in Small Firms: A Structural Equation Model, *MIS Quarterly*, September, pp. 279-305.

Illeris, S. (1986) New Firm Formation in Denmark the importance of the cultural background, in, *New financial developments in Europe* (eds.) Keeble, D., Wever, E. Croom Helm, London;141-50.

Johnson, G. and Scholes, K. (1993) *Exploring Corporate Strategy: Text and Cases*, 3rd. edition, Prentice Hall, London.

Johnson, G., Melin, L. and Whittington, R. (2003) 'Micro Strategy and Strategising: Towards an Activity-Based View', *Journal of management Studies Special Issue on Micro Strategy and Strategising*, Vol. 40(1), pp. 3-22.

Jones, S. (1985) Depth Interviewing, in R. Walker (ed.), *Applied Qualitative Research*, Aldershot: Gower, pp/ 45-55.

Joyce, P., Woods, A., McNulty, T. and Corrigan, P. (1990) Barriers to Change in Small Businesses, *International Small Business Journal*, July-Sept., Vol. 8(4), pp. 49-57.

Kast, F. and Rosenzweig, J. (1973) *Contingency Views of Organizations and Management*, Science Research Associates Inc., Chicago.

Katz, D and Rosenzweig, F. (1970) *Management and Organisation*, McGraw-Hill, N.Y.

Katz, E. and Lazarfield, P.F. (1955) *Personal Influence*, Glencoe, Free Press.

Kuhn, T.S. (1970) *The Structure of Scientific Revolutions*, 2nd. Edn., University of Chicago Press, USA.

Kets de Vries, M.F.R. (1997) The Entrepreneurial Personality: A Person at the Crossroads, *Journal of Management Studies*, Vol. 14, pp. 34-57.

King, P. and Clift, J. (1999) Time to Distinguish between e-Business and e-Commerce, *Financial Times*, June 2, pp.25.

Kotler, P. (1994) *Marketing Management: Analysis, Planning, Implementation and Control*, 8th. Edition, Prentice Hall International (UK) Ltd,, London.

Lakatos, L. (1970,a) History of Science and its Rational Reconstruction in *PSA 1970 Boston Studies in the Philosophy of Science* (eds.) Buck, R.C. and Cohen, R.S., Dordrecht, Holland:13. Reidel.

- Lakatos, L. (1970,b) *Falsification and the Methodology of Scientific Research Programmes in Criticism and the Growth of Knowledge* (eds.) Lakatos, L. and Musgrave, A., Cambridge University Press, UK.
- Lambooy, J.G. (1997) *Knowledge Production, Organization and Agglomeration*. *Geo Journal*, Vol. 41, pp. 293-300.
- Lasswell, H.D. (1948) *The Structure and Function of Communication in Society*, in *The Communication of Ideas*, Bryson (ed.), Harper Brothers, N.Y.
- Lawrence, P.A. and Lee, R.A. (1993) *Insight Into Management*, Oxford Science Publication, Oxford, UK.
- LeCompte, M.D. and Preissle, J. (1993) *Ethnography and Qualitative Design in Educational Research* (2nd. Ed.), Academic Press, San Diego.
- Lee, A.S. (1991) Integrating positivist and interpretive approaches to organisational research, *Organisation Science*, Vol. 2(4), pp. 342-365.
- Lees, J.D. and Lees, D.D. (1987) Realities of Small Business Information System Implementation, *Journal of Systems Management*, January, pp. 6-13.
- Lefebvre, L.A., Mason, R. and Lefebvre, É. (1997) The Influence Prism in SMEs: The Power of CEOs' Perceptions on Technology Policy and Its Organisational Impacts, *Management Science*, Vol. 43(6), pp. 856-878.
- Levinthal and March (1993) The Myopia of Learning, *Strategic Management Journal*, Vol. 14, pp. 95-112.
- Levitt, L. (1995) Commercial use of the Internet, *Proceedings of INET 95*.
- Light, R., Singer, J. and Willett, J. (1990) *By Design: Conducting Research on Higher Education*, Harvard University Press, Cambridge, CA.
- Locke, R.R. (1989) *Management and Higher Education since 1940*, Cambridge University Press, N.Y.
- Lofland, J. (1971) *Analysing Social Settings*, Belmont, Wadsworth publishing, CA.
- Logan, M. and Logan, R. (1996) Alignment: How to do Business on the Internet, *Proceedings of INET96*.
- Lovering, J. (1986) *The Restructuring of the Defence Industries and the role of the State* Working Paper No. 59, Bristol University.
- Lovering, J. (1987) *The Economic Geography of Defence Electronics in the South East*, SEEDS', Working Papers, Nov.

- Lybert, N. (1998) The association between information gathering and success in industrial SMEs: the case of Belgium, *Entrepreneurship and Regional Development*, Vol. 10, pp. 335-351.
- Lymer A, Johnson, R & Baldwin, A. (1997) The Internet and the Small Business, *Proceedings of INET'98: The Internet Summit, Geneva, Switzerland, July 21-24.*
- Malecki, E.J. (1991) *Technology and Economic Development*, Longman Scientific and Technical, London
- Malerba, F. (1987) *The Semi Conductor Business: The Economics of rapid growth and decline*, London Frances, Pinter,
- Marshall, L. (1997) Facilitating Knowledge Management and Knowledge Sharing: New Opportunities for Information Professionals, *Online*, Vol. 21(5), pp. 92-98.
- Martin, C.J. (1989) Information Management in the Smaller Business: The Role of the Top Manager, *International Journal of Information management*, Vol. 9, pp. 187-197.
- Martinez, N., Nueño ,P. (1988) Catalan Regional Business Culture, *Entrepreneurship and Management Behaviour: An Exploratory Study*. In Weiss J.W. (ed.) *Regional cultures, managerial behaviour and entrepreneurship: an international perspective*, Quorum Books, New York; 61-75.
- Mason, J. (1996) *Qualitative Researching*, Sage, London.
- Maxwell, J.A. (1996) *Qualitative Research Design: An Interactive Approach*, Applied Social Research Methods Series, 41, Sage.
- McNeill, P. (1990) *Research Methods (2nd. Ed.)*, Routledge, London.
- Miles, M. and Huberman, A.M. (1994) *Qualitative Data Analysis*, Sage, London.
- Miles, R.E. and Snow C.C. (1978) *Organisational Strategy, Structure and Process*, McGraw-Hill Book Co., N.Y.
- Mintzberg, H. and Quinn, J.B. (1996) *The Strategy Process: Concepts, Contexts, Cases*, Prentice Hall, London.
- Mintzberg, H., Ahlstrand, B. and Lampel, J. (1998) *Strategy Safari*, Prentice Hall, London.
- Molnar, K.K. and Sharda, R. (1996) Using the Internet for knowledge acquisition in expert systems development: a case study, *Journal of Information Technology*, Sept, Vol. 11(3), pp. 223-234.
- Montazemi, A.R. (1988) Factors Affecting Information Satisfaction in the Context of the Small Business Environment, *MIS Quarterly*, Vol. 12(2), pp. 239-256.

Moreton, R. (1995) Transforming the Organisation: The Contribution of the Information Systems function, *Journal of Strategic information Systems*, Vol. 34(2), pp. 149-163.

Morgan, G. and Smircich, L.(1980) The Case of Qualitative Research, *Academy of Management Review*, Vol. 5(4), 491-500.

Morgan, G. (1996) *Images of Organization*, Sage, London.

Motiwalla, L.F. (1995) in Molnar, K.K. and Sharda, R. (1996) Using the Internet for knowledge acquisition in expert systems development: a case study, *Journal of Information Technology*, Sept, Vol. 11(3), pp. 223-234.

NatWest Review of Small Business Trends (1992), Small Business Trust, Vol. 2(1), pp. xii.

Naylor, J.B. and Williams, J. (1994) The Successful Use of IT in SMEs on Merseyside, *European Journal of Information System*, Vol. 3(1), pp. 48-58,

Nelson, R. and Winter, S. (1982) *An Evolutionary Theory of technological change*, Belknap Press, Cambridge, Mass.

O’Gorman, C. and Doran, R. (1999) Mission Statements in Small and Medium-sized Businesses, *Journal of Small Business Management*, Vol. 37(4), pp. 59-66.

Office of Technology Assessment (1984) *Technology, innovation and regional economic development* Washington US Government Printing Office.

Opportunity for all in a world of change: a white paper on enterprise, skills and innovation. DTi publication (2001).

Patton, M.Q. (1990) *Qualitative Evaluation and Research Methods* (2nd. Ed.), Sage, Newbury Park, CA.

Pawar, B.S. and Sharda, R. (1997) Obtaining Business Intelligence on the Internet, *Long Range Planning*, Vol. 30(1), pp. 110-121.

Pedler, M., Boydell, T. and Burgoyne (1989) *Towards the Learning Company*, *Management Education and Development*, Vol. 20(1), pp. 1-8.

Penrose,E.T. (1952) Biological Analogies in the Theory of the Firm; *American Economic Review*, Vol. XLII, No. 5; Dec.

Pettigrew, A.M. (1985) *The Awakening Giant*, Basil Blackwell.

Pfeffer, J. (1992) ‘Managing with Power: Politics and Influences in Organisations’, Harvard Business School Press, Boston.

Phillips, B.S. (1976) *Social Research Strategy and Tactics* (3rd. Ed.); Macmillan, Pubs., N.Y.

- Poon S. and Swatman, P.M.C. (1998) A Combined Method Study of Small Business Internet Commerce, *International Journal of Electronic Commerce*, vol. 2(3), pp. 31-46.
- Poon, S. and Jevons C. (1997) Internet enabled International marketing - A Small Business Network Perspective, *Journal of Marketing Management*, Vol. 13(1-4), pp. 29-41.
- Poon, S. and Swatman, P. (1995) The Internet for Small Business: an enabling infrastructure for competitiveness (1995) Proceedings of the 5th. Internet Society Conference, INET'95, Hawaii.
- Poon, S. and Swatman, P. (1996) Small Business Alliances: A Framework for Internet-enabled Strategic Advantage, Proceedings of the 29th. Annual Hawaii International Conference on Systems Sciences, (in *Internet and SME*, Vol. 1).
- Poon, S. and Swatman, P.M.C. (1997a) A qualitative study of Small Business Internet Commerce Issues'. Department of Information technology, Murdoch University, Australia.
- Poon, S. and Swatman, P.M.C. (1997b) Emerging Issues on Small Business Use of the Internet: 23 Australian Case Studies, Proceedings of the 5th. European Conference on Information Systems, Cork, Ireland, Vol. 2, pp. 882-895.
- Porter, M.E. (1980) *Competitive Strategy: Techniques for Analysing Industries and Competitors*, Free Press, N.Y.
- Porter, M.E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*, Free Press, N.Y.
- Porter, M.E. and Miller, V.E. (1985) How information gives you competitive advantage, *Harvard Business Review*, July/August, Vol. 63(4), pp. 149-160.
- Porter, M.E.(1990) *The Competitive Advantages of Nations*, Macmillan Press Ltd., London.
- Punch, K.F. (1998) *Introduction to Social Research: Quantitative and Qualitative Approaches*, Sage, London.
- Putnam, H. (1981) *Reason, Truth and History*, Cambridge University Press, Cambridge, UK.
- Quelch, J. A. and Klein, L. R. (1996) The Internet and International Marketing, *Sloan Management Review*, Spring, Vol. 37(3), pp. 60-75.
- Raymond, L. (1985) Organisational Characteristics and MIS Success in the Context of Small Business, *MIS Quarterly*, Vol. 9(1), pp. 37-52.

- Raymond, L., Pierre_Andre, J., Carrierw, J.B. and Lachance, R. (1996) Managing Technological Change In Manufacturing SMEs: A Multiple Case Analysis, *International Journal of Technology Management*, Vol. 11(3/4), pp. 270-285.
- Reinharz, S. (1989) in McNeill, P. (1990) *Research Methods* (2nd. Ed.), Routledge, London.
- Remenyi, D. and Williams, B. (1995) Some aspects of methodology for research in information systems, *Journal of Information Technology*, Vol. 10, pp. 191-201.
- Rennie, M.W. (1993) Global Competitiveness: Born Global, *McKinsey Quarterly*, Sept., Vol. 22, pp. 45-52.
- Riggins, F. (1998) A Framework for Identifying Web-based Electronic Commerce Opportunities, Working Paper, DuPree School of Management, Georgia Institute of Technology, February.
- Rosenberg, N. (1982) *Inside the Black Box*, Cambridge University Press, Cambridge.
- Sadler-Smith, E., Spicer, D. and Chaston, I. (2001) Learning Orientations and Growth in Smaller Firms, *Long Range Planning*, Vol. 34(2), pp. 139-158.
- Sampller, J. L. (1998) Redefining Industry Structure for the Information Age, *Strategic Management Journal*, Vol. 19, pp. 343-355.
- Sarantakos, S. (1998) *Social Rsearch* (2nd. Ed.), Mcmillan, London.
- Schutz, A. (1973) "Concept and Theory Formation in the Social Sciences", in Natanson, M. (Ed.) *Collected Papers 1*, The Hague, Martinus Nijhoff, pp. 48-66.
- Sen ,S.K. Organisational Changes in Small to Medium Electronic Enterprises SMEEs in Hertfordshire in the 1990s, MBA dissertation, University of Hertfordshire, Sept., 1995.
- Senge, M. (1990) *The Leader's New Work: Building Learning Organisations*, Sloan Management Review, Fall, pp. 7-22.
- Senge, P.M. (1990) *The Fifth Discipline*, Currency Doubleday, N.Y.
- Shulman, L.S. (1988) in Punch, K.F. (1998) *Introduction to Social Research: Quantitative and Qualitative Approaches*, Sage, London..
- Simon (1987) in Lovering, J. (1987) *The Economic Geography of Defence Electronics in the South East, SEEDS'*, Working Papers, Nov.
- Simon, J.L. (1969) *Basic Research Methods in Social Science*; Random House, Inc., N.Y.
- Smallbone, D. and Wyer, P. (1994) SMEs and Exporting: Developing an Analytical Framework, paper presented to the Small Business and Enterprise Development Conference, Manchester, March, 1994.

Small Business Services, SME Statistics, 2001.

SMEs and Electronic Commerce (1998), Directorate for Science, Technology and Industry Committee, DSTI/IND/PME(98)18/FINAL, November.

Stacey, R.D. (1990) Dynamic Strategic Management in Armstrong, M. (ed.), The New Manager's Handbook, Kogan Press, London.

Stacey, R.D. (1991) The Chaos Frontier: Creative Strategic Control for Business, Butterworth-Heinemann Oxford.

Stacey, R.D. (1993) Strategic Management and Organisational Dynamics, Pitman Publishing, London.

Stake, R.E (1994) in Punch, K.F. (1998) Introduction to Social Research: Quantitative and Qualitative Approaches, Sage, London.

Stanworth, J. and Gray, C. (1991) Bolton 20 years on: The Small Firm in the 1990s, Paul Chapman Publishing.

Storey D.J. (1993) Understanding the Small Business Sector, Routledge, London.

Storey, D.J. and Cressy, R. (1995) Small Business Risk: A Firm and Bank Perspective, Working paper, SME Centre, Warwick Business School.

Strauss, A.C. and Corbin, J. (1998) Basics of Qualitative Research (2nd. Ed.) Sage, London.

Swan, J, Newell, S., Scarbrough, H. and Hislop, D. (1999) Knowledge Management and Innovation: Networks and Networking, Journal of Knowledge Management, Vol. 3(4), pp. 262-275.

Sweeney, G.P. (1985) Innovation is Entrepreneur-led, in, Innovation Policies: In International Perspective (ed.) Sweeney, G.P., London Frances Pinter.

Taylor, S.J. and Bogman, R. (1984) Introduction to Qualitative Research Methods, John Wiley, N.Y.

Thompson, S.H. (1998) Small Companies' View of the Web as a Marketplace, Singapore Management Review, Singapore Institute of Management.

Thorpe, R. (1988) Research into Success and Failure of Small Companies: A Micro-study in the North-West, Social Research Association Annual Conference, Regents College, London, December.

UK Companies Act 1985

Vadapalli, A. and Ramamurthy, K. (1998) Business Use of Internet: A Critical Analysis And A Set Of Proposition, [E-Mail: rmurthy@csd.uwm.edu].

- Van Mannen, L (1979) Reclaiming Qualitative Methods for Organisational Research: A Preface, *Administrative Science Quarterly*, Vol. 24, pp. 520-526.
- Venkatraman, N. (1994) IT-Enabled Business Transformation: From Automation to Business Scope Redefinition, *Sloan Management review*, Winter, pp. 73- 87.
- Vickers, G. (1963) *The Art of Judgement: A Study of Policy Making*, Harper and Row, London.
- Walker (1988) in Bryman, A. (1996) *Quantity and Quality in Social Research*, Routledge, London.
- Walsham, G. (1995) Interpretive Case Studies in IS Research: Nature and Method, *European Journal of Information systems*, Vol. 4, pp. 74-81.
- Weiss, R.S. (1994) *Learning from Strangers; The Art and Method of Qualitative Interviewing*, Free Press, N.Y.
- Welsh and Cummings (1993) in Poon, S. and Jevons C. (1997) Internet enabled International marketing - A Small Business Network Perspective, *Journal of Marketing Management*, Vol. 13(1-4), pp. 29-41.
- Welsh, J.A. and White, J.F. (1981) A Small Business Is Not a Little Big Business, *Harvard Business Review*, Jul.-Aug., Vol. 59(4), pp. 18-32.
- Winter, S.G. (1987) Knowledge and Competence as Strategic Assets, in D. Teece (ed.) *The Competitive Challenge*, Ballinger, Cambridge, MA, pp. 159-184.
- Woods, A. and Joyce, P. (2003) Owner-Manager and the Practice of Strategic Management, *International Small Business Journal*, Vol. 21(2), pp. 181-195.
- Wyer and Kaur Johl, S. (1997) Management Training for the Small-Medium size Enterprise: Developing a Research Approach for the First-time Small Business Researcher, *Journal of Enterprising Culture*, Vol. 5(4), Dec. 1997, pp. 355-374.
- Wyer, P (1998) Small Business Interaction with the External Operating Environment – the Role of Strategic Management and Planning the Small Business, paper presented to Small Business and Enterprise Development Conference, Sheffield, March 30th.
- Wyer, P, Mason, J. and Theodorakopoulos, N (2000) Exploring the Role of People Management in Enhancing SME Competitiveness for the Achievement of Sustainable Growth, in Lloyd-Reason, L and Wall, S. (Eds.) *Dimensions of Competitiveness: Issues and Policies*, Edward Elger Publishing Inc., Cheltenham.
- Wyer, P. (1990) The Effects of varying Forms and Degrees of Government Intervention Upon the Effective Competitiveness of UK Small Businesses, unpublished Ph.D. Thesis, The University of Birmingham.

Wyer, P. and Mason, J. (1998) Recognising the complexity of the small business management task within Malaysia: toward an understanding of 'Best Management Practice', paper presented to Small Business and Enterprise Development Conference, Leeds, March 30th.-31st.

Wyer, P. and Mason, J. (1998a) Recognising the complexity of the small business management task within Malaysia: toward an understanding of 'Best Management Practice', paper presented to The Second Global Change Conference – The Impact of Change in the 21st. Century, Manchester, April 6th. - 7th. 1998.

Wyer, P. and Mason, J. (1998b) The Case for an Organisational Learning Perspective to Understanding the Strategic Development of Small Business, Paper Presented at Enterprise and Learning Conference, Aberdeen, 10-11th. , September.

Wyer, P. and Mason, J. (1999) Empowerment in Small Businesses, Participation and Empowerment: An International Journal, Sept., pp. 186-193.

Wyer, P. and Smallbone, D. (1999) Export Activity in SMEs: A Framework for Strategic Analysis, The Academy of Business Administration, Vol. 4(2), pp. 9-24

Wyer, P. and Barrett, B. (2002) Enhancing Understanding of Marketing within a Small Business Development Context presented at the Academy of marketing 7th. Annual Research Symposium on the Marketing/Entrepreneurship Conference, Oxford Brookes University, January 9-11th.

Wynarczyk, P., Watson, R., Storey, D.J., Short, H. and Keasey, K. (1993) The Managerial Labour Market in Small and Medium sized Enterprises, Routledge, London.

Yap, C.S., Soh, C.P.P. and Raman, K.S. (1992) Information Systems Success Factors in Small Business, International Journal of Management Science, Vol. 20 (5/6), pp. 597-609.

Yin, R. K. (1984) in Gable, G.G. (1994) Integrating case study and survey research methods: an example in information systems, European Journal of Information Systems, Vol.3 (2), pp. 112-126.

Yin, R.K. (1989) Case Study Research, Design and Methods, Sage Publishing, London.

Yoffie, D. and Cusumano, M.A. (1999) Judo Strategy, The Competitive Dynamics of Internet Time, Harvard Business Review, Jan-Feb., Vol. 77(1), pp. 70-81.

Zinatelli, N., Cragg, P.B. and Cavaye, A. (1996) End User Computing Sophistication and Success in Small Firms, European Journal of Information Systems, Vol. 5, pp. 172-181.